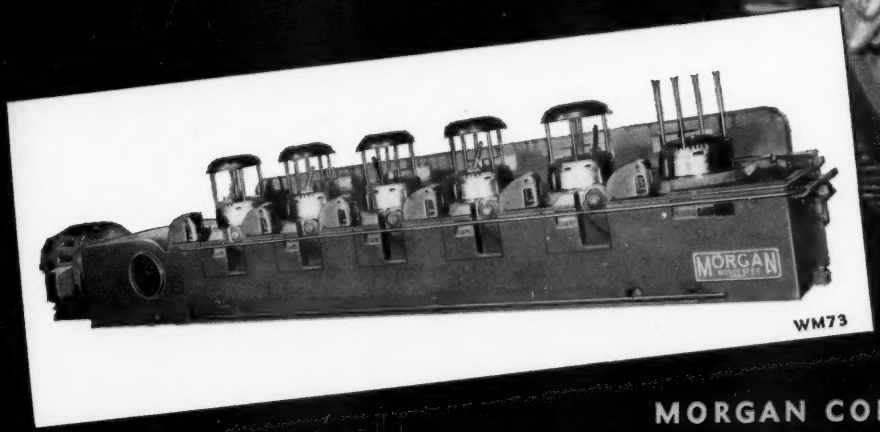
WIRE AND WIRE PRODUCTS

JUNE 1953

Make More

with

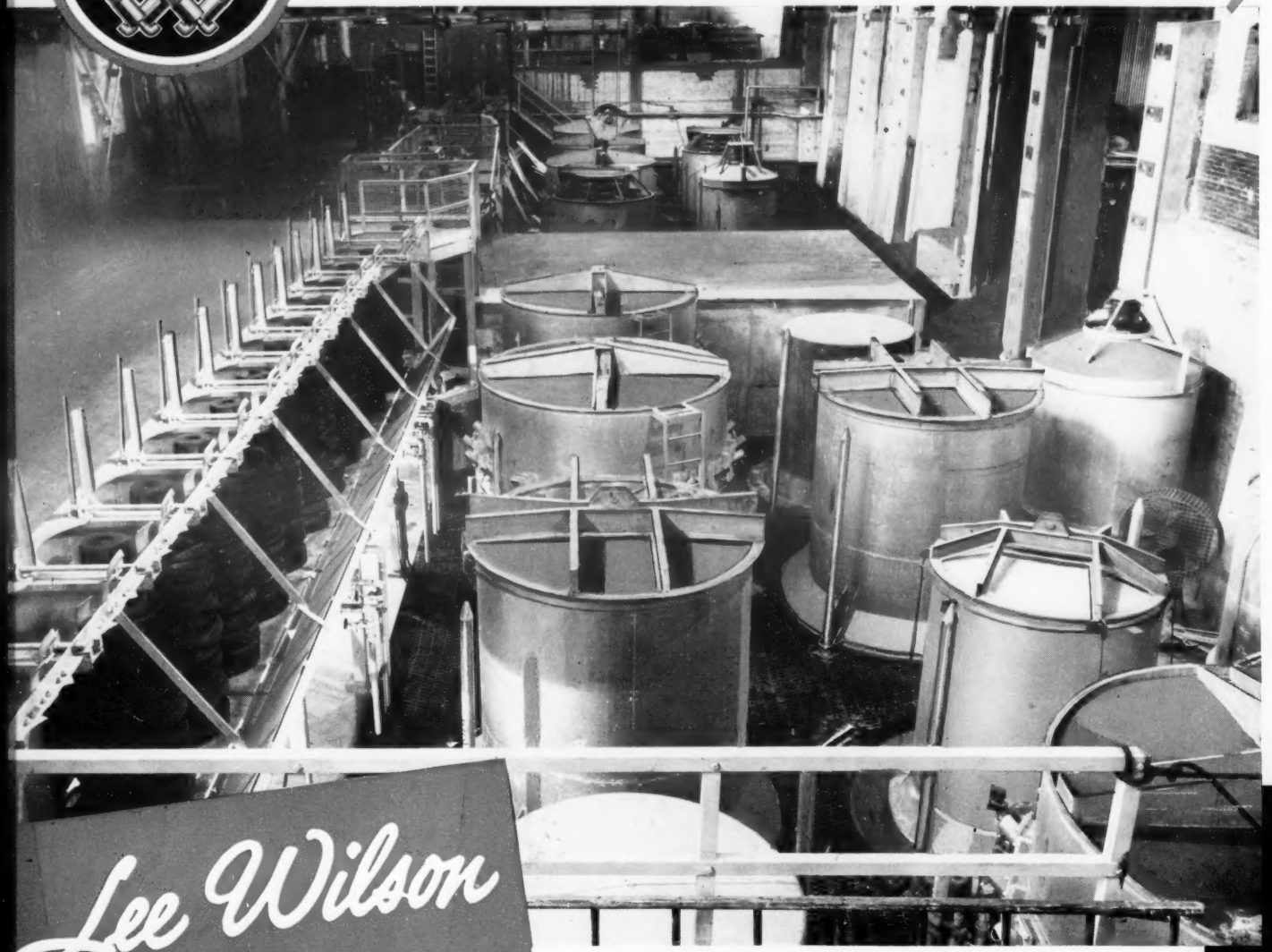
MORGAN CONNOR WIRE MACHINES



MORGAN CONSTRUCTION COMPANY
WORCESTER, MASSACHUSETTS

OFFICIAL PUBLICATION OF THE WIRE ASSOCIATION

WILSON *Wire Annealing*



THE original installation at Colorado Fuel & Iron Corporation at Pueblo, Colorado, was installed in 1945 and consisted of two 74" x 84" furnaces and six bases. In 1951 one furnace and two bases were added to the original layout and in 1952 the entire installation was duplicated so there are now six furnaces and sixteen bases in this plant. Production — 150 tons per day of low carbon wire annealing.

Repeat business is the best evidence of a job well done

BELL TYPE FURNACES

★

RADIANT TUBE HEATING

★

ANNEALING PROCESSES

Lee Wilson

ENGINEERING *Co., Inc.*

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ANNEALING PROCESSES
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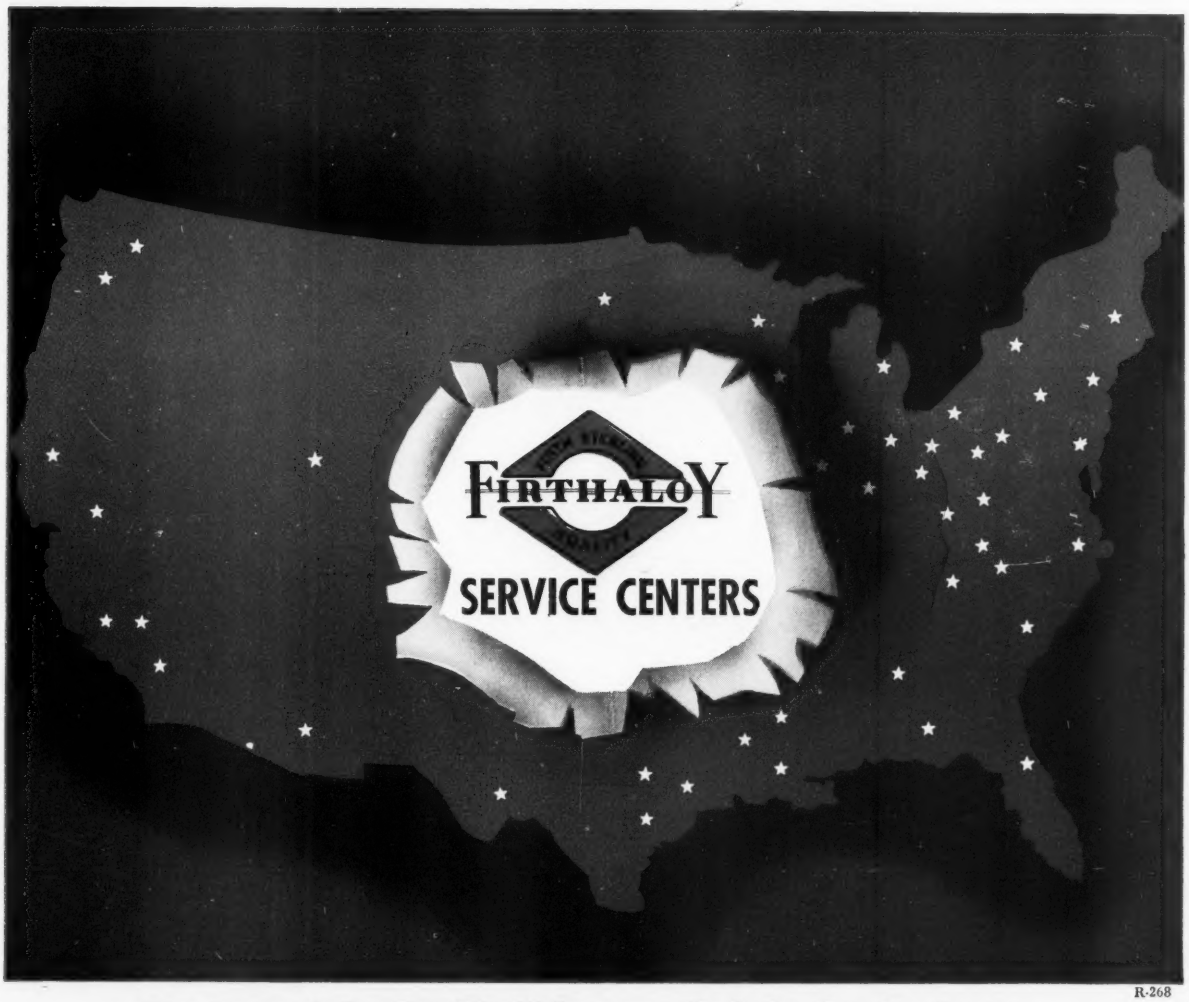
NOW··
another expansion of FIRTH SERVICE



R-268

The Country's Leading Die Makers are Firthaloy Service Centers

The overwhelming demand of American Industry for Firthaloy carbide dies has made it desirable to expand services through a new and closer working relationship with the country's leading diemakers, can assure you faster delivery, better service and lower cost. When you specify Firth Sterling quality carbide, backed by years of diemaking experience for these products.

- Rough Drilled and Finished Die Nibs
- Finished Round Dies
- Finished Shape Dies
- Finished Mandrels and Mandrel Nibs
- Finished Deep Draw and Cartridge Case Dies
- Finished Cold Heading and Extrusion Dies
- Side and End Blocks
- Quills and Cut-Off Knives
- Compacting Dies
- Finished Nail Dies and Cutters

As always Firth Sterling maintains a sales and production engineering service, and development facilities to design, fabricate, and test new carbide products in your plant.

High Speed Steels • Tool & Die Steels • Stainless Specialties
High Temperature Alloys • Sintered Tungsten Carbides
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GENERAL OFFICES: 3113 FORBES ST., PITTSBURGH 30, PA.

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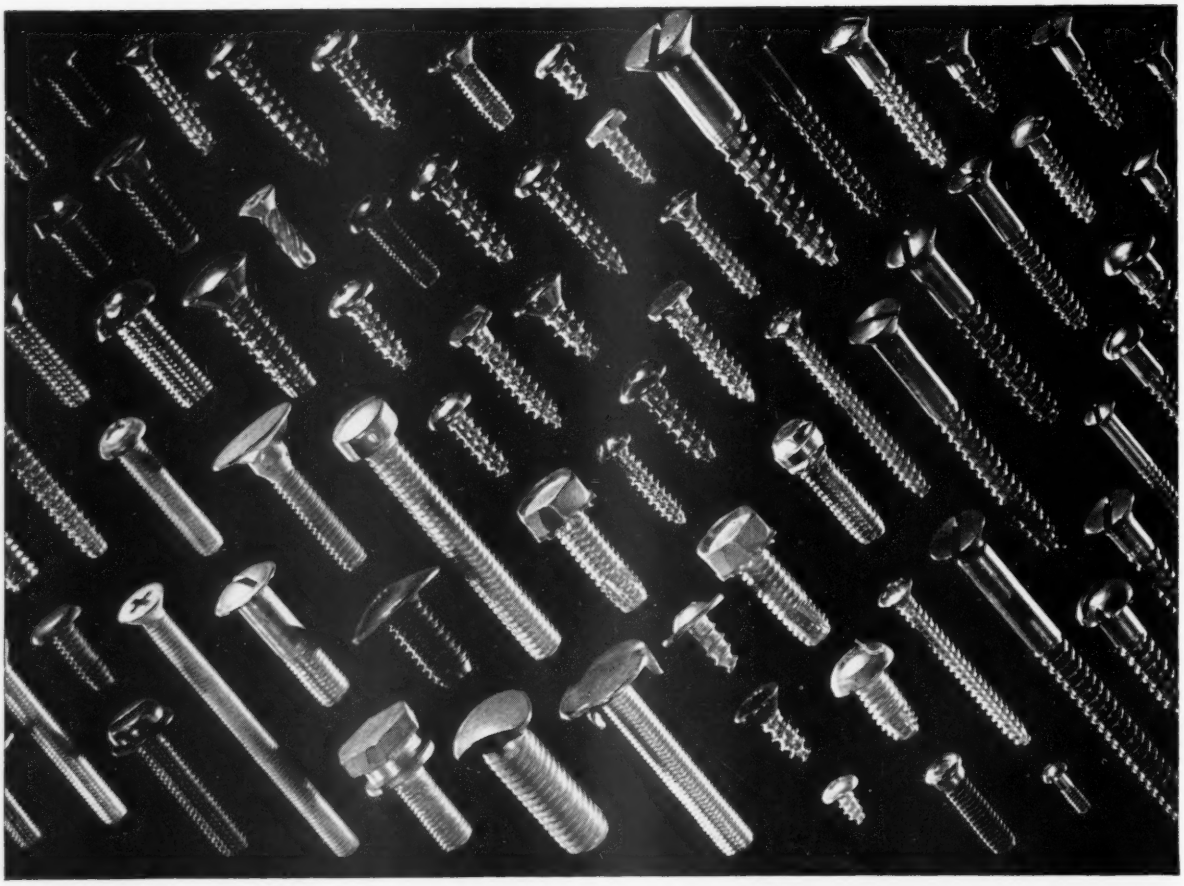


Each Made From the Right Cold-Heading Wire

If you're cold-heading fasteners, you know how important it is to start with the right wire. With the right wire, you can produce the fastener economically, and at the same time make an item that will do its job right.

Bethlehem can help you improve your production of cold-headed fasteners by supplying wire with the required properties. Perhaps the wire you need must have good machinability. Or perhaps it must be of the right composition to respond to heat-treatment properly. Or be able to withstand severe cold-heading operations.

And of course all fasteners call for wire that is sound, uniform in analysis, and free from injurious surface defects. But whatever your requirements—for fasteners, or any other application—you can be sure that we can supply you with the wire that will help make your product better.

Bethlehem makes just about every kind of steel wire. Some are general-purpose grades; others, like screw wires, are tailor-made for a single application. If you make screws, or any other item by cold-heading, give us a call. We'll be glad to recommend the right kind of wire for your job.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

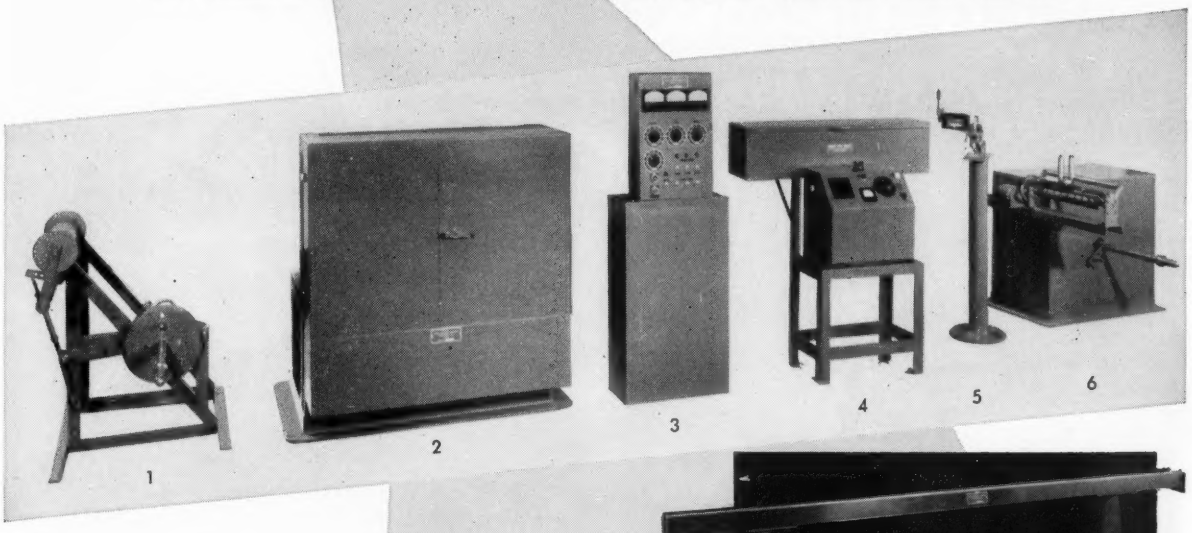
Bethlehem **COLD-HEADING WIRE**

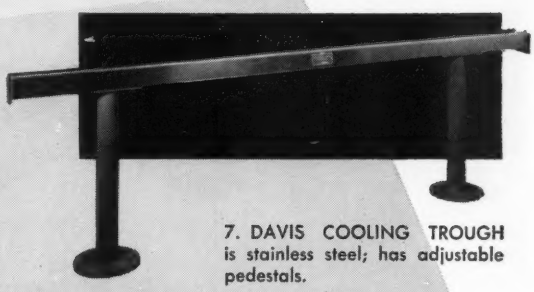
BETHLEHEM STEEL

for faster, more uniform wire production,

USE DAVIS EQUIPMENT WITH YOUR EXTRUDER.

Teamwork in machinery is just as important as teamwork in manpower. All Davis-engineered wire-covering equipment is designed to function hand-in-hand with *your* extruder . . . from the Pay-off right thru to the Take-Up . . . to co-ordinate your insulating operations into one smooth production line that SPEEDS OUTPUT, makes a better, MORE UNIFORM PRODUCT, and BOOSTS YOUR PROFITS!





1. DAVIS PAY-OFF is simply yet ruggedly built for wide range of reel sizes. Constructed for long, dependable service, its automatic control prevents wire overtravel . . . stops when wind-up stops!

2. DAVIS CAPSTAN design improvements give you lower cost. Use of welded steel also effects weight-saving. Improvements include aluminum alloy wheel (15, 30 or 36"), stainless steel cooling tank and enclosure. Single or dual for heavy pulling operations. In speeds to match your needs.

3. DAVIS CONTROL PANEL is electronically operated; enables presetting capstan speeds and wind-up tension accurately over a wide range. Controls quality and uniformity of wire; saves time and materials.

4. DAVIS CV TYPE SPARK TESTER tests insulations on continuous vulcanizing or plastic extruding machines. Sensitive, it spark-tests wire up to 1200 feet per minute. It signals and counts insulation faults. Test volts 3,000 to 15,000; 6,000 to 30,000 on standard units.

5. DAVIS COUNTER, with totalizer, is simple to set and guaranteed accurate. Self-contained; easily moved. For wire and cable sizes .010 to 1½".

6. DAVIS TAKE-UP provides speed tension and control with a minimum of operator supervision. It has its own individual drive, and adjustable traverse for various wire and cable sizes and reel widths.

7. DAVIS COOLING TROUGH is stainless steel; has adjustable pedestals.

All Davis equipment is assembled, tested, and delivered ready for use; is ably engineered, fabricated of finest materials by wire mill craftsmen for long life and thorough satisfaction. Your inquiries are invited. Write for literature.

Davis ELECTRIC CO.
WALLINGFORD, CONN., U.S.A.

HARNESS TESTERS ★ PAY-OFFS ★ TRAVERSES

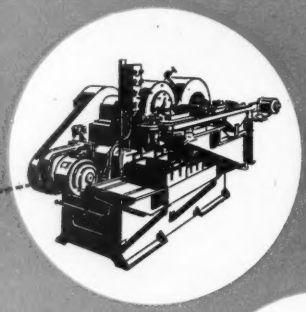
SPARK TESTERS ★ SPOOLERS ★ TAKE-UPS ★ CAPSTANS

Correspondents throughout the world

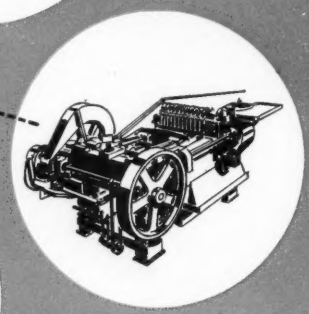
Foreign Sales Representatives: OMNI PRODUCTS CORP. 460 — 4th Avenue, New York 16, New York

DAVIS
WIRE & CABLE EQUIPMENT

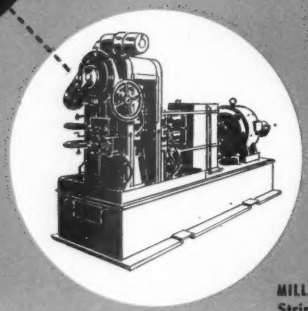
5 KINDS OF WATERBURY FARREL ANSWERS TO YOUR MASS PRODUCTION PROBLEMS



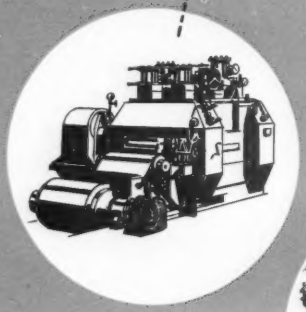
COLD PROCESS BOLT & NUT MACHINERY — Headers (all types) • Rivet Machinery • Trimmers • Thread Rolling Machines • Slotters • Nut Formers and Tappers, etc.



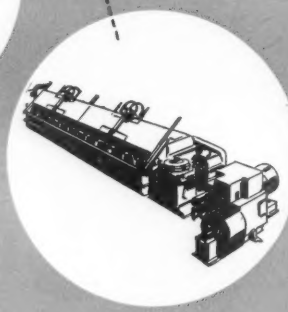
POWER PRESSES—Crank, Cam and Toggle; also Rack and Pinion Presses • Eyelet Machines • Multiple Plunger Presses • Horizontal and Hydraulic Presses, etc.



MILL MACHINERY — Rolling Mills: Strip, Rod, Wire Flattening, (For Ferrous and Non Ferrous Metals) • Also Slitters • Straighteners • Cut-off Saws • Coilers • Winders, etc.



SPECIAL MACHINERY—Sendzimir Mills • Small Arm Ammunition Machines • Collapsible Tube Machines • Coining Mills, etc.



WIRE MILL EQUIPMENT — Continuous Wire Drawing Machines (Upright Cone and Tandem) • Wire Flattening Mills • Chain Draw Benches • Pointers • Swagers • Bull Blocks • String-up • Machines • Spoolers, etc.

Within These Basic WF Equipment Lines, Individual Machines Are Custom-Engineered For Specific Applications

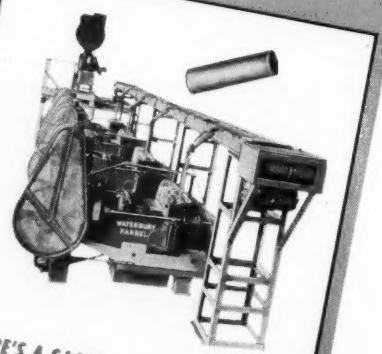
If your metal-working machinery problem falls into any of these five groups, there are good reasons for looking to Waterbury Farrel for the answer.

There's Waterbury Farrel's continuing engineering research with more than a century of machine building experience to draw upon. This results in soundly designed and thoroughly tested features which improve production.

There's Waterbury Farrel's world-wide reputation for rugged, long-lasting construction. This gives you the assurance that WF machines are built to provide long years of uninterrupted production.

Waterbury Farrel can custom-engineer special equipment or adapt a standard machine to fit your specific problem.

For further information, write for free booklets on any of the machines mentioned on this page or contact your nearest WF office.



HERE'S A SAMPLE of Waterbury-Farrel mass production equipment in action. This complete WF automatic production unit combines a 40-ton double-acting, upright blanking and cupping press, a conveyor feed and four 7-station horizontal drawing presses to draw 340 zinc shells per minute.

FOUNDED WATERBURY FARREL 1851

WATERBURY FARREL FOUNDRY & MACHINE CO. • WATERBURY, CONN.

Offices: Chicago, Cleveland and Millburn, N. J.

WF-7

WIRE AND WIRE PRODUCTS*

Reg. U. S. Pat. Off.

A monthly publication devoted to the production of Wire, Rod and Strip, Wire and Rod Products and Insulated Wire and Cable.

DRAWING — ROLLING — EXTRUDING — FORMING — FABRICATING

Vol. 28 JUNE, 1953 No. 6

Designated as Official Publication By The Wire Association

Contents

Editor's Desk 565

Mechanical Handling at the Wire Mills of John A. Roebling's Sons Corporation by John W. Maisch 567

Packaging of Wire and Wire Products by A. H. Andrews 572

The Trenton Regional Meeting by Edmund D. Sickels 577

Fabrication of Silver Wire by Fred M. Carter 579

Galvanic Removal of Scale, Burrs, Rust and Surface Polishing, and Galvanic Acid Galvanizing by Richard Beck 582

Small Rolling Mills Designed with Heavy Machine Features 586

Government Wire Production Information 587

Outstanding Personalities of the Wire Industry 596

A Review of Recent Wire Patents 604

Index to Advertisers 632

Where-to-Buy 633-636

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FLANGED STEEL TRAVERSES

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Niles Flanged Steel Traverses are manufactured in a wide range of sizes up to 56" diameter and 48" traverse... in plain, painted and hot dip galvanized finishes. The special "Reinforced Type" has *extra strength* where it is needed most—at bolt holes and base of the flange—yet saves weight through use of lighter gauge steel. Width of flange and number of bolt and drain holes are furnished to your specifications. Available for prompt delivery. Write for prices.

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PRESSED STEEL DIVISION
REPUBLIC STEEL CORPORATION
NILES, OHIO

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THE PATHFINDER

A straight through non-slip machine of advanced design

Special 415 Block Pathfinder Type 22/40 for drawing mild steel from 5 s.w.g. at speeds up to 2,250 feet per minute.

1. The wire passes straight through the machine from block to block. The block speeds are automatically regulated by our patented electrical gear. Wire tension between blocks can be independently set.
2. Tilted blocks enable sufficient wire to be accumulated on each block to allow for ample cooling and yet pass through the die to the bottom of the following block in a straight line.
3. Almost infinite drafting can be obtained at each die.
4. The machine is ideal for use with a heavy spooler carrying up to about two tons of finished wire.
5. Owing to the absence of all guide pulleys, multi-holing from very heavy inlets is perfectly feasible.
6. Standard SIX BLOCK machines are available for high carbon or mild steel as follows:—

	Type 22/30	Type 22/40
Block Diameter.	22"	22"
Maximum inlet.	.250"	.3125"
Finish.	.120"—.072"	.156"—.080"
Drawing Speeds Ft/Min.	800—1600	700—1400

MADE IN BRITAIN

MARSHALL RICHARDS MACHINE CO., LTD.

CROOK COUNTY • DURHAM • ENGLAND

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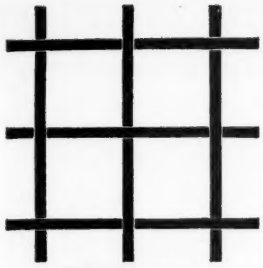
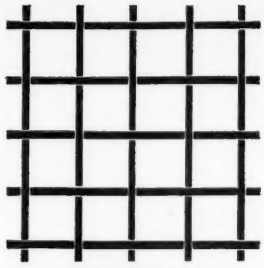
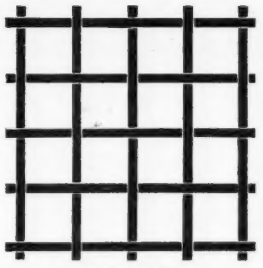


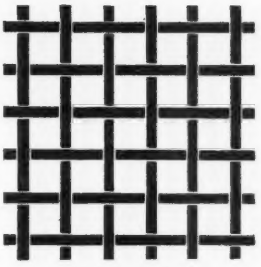
2 Mesh .063"
76.4% Open Area



3 Mesh .041"
76.7% Open Area

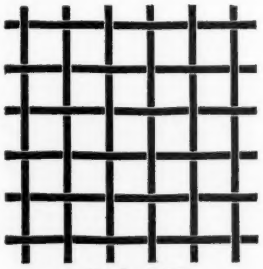


3 Mesh .054"
70.1% Open Area

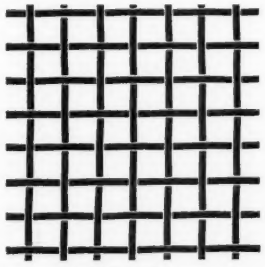


4 Mesh .063"
56.0% Open Area

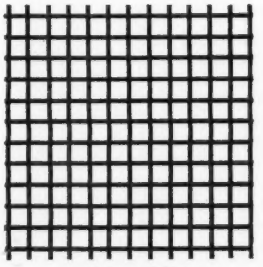
CALL CHASE



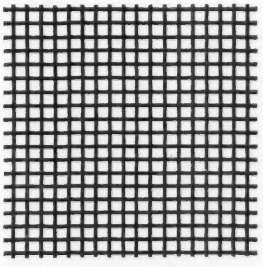
4 Mesh .047"
65.9% Open Area



5 Mesh .041"
63.2% Open Area

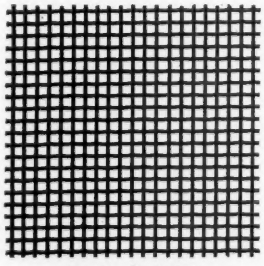


8 Mesh .028"
60.2% Open Area

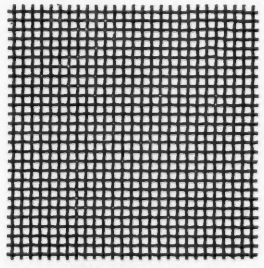


12 Mesh .023"
51.8% Open Area

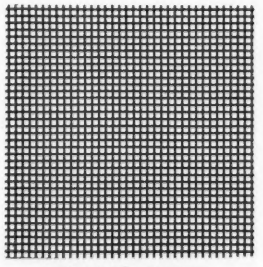
FOR INDUSTRIAL WIRE CLOTH



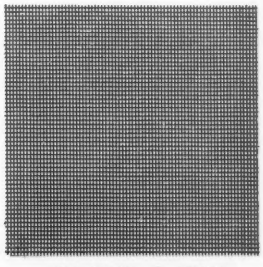
14 Mesh .020"
51.0% Open Area



18 Mesh .017"
48.3% Open Area



24 Mesh .0135"
45.8% Open Area



50 x 40 Mesh .009"
35.7% Open Area

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From coarse wire cloth for window or door grilles . . . right down to extra-fine mesh for food preparation, call Chase.

Double crimped wires of Chase Wire Cloth keep openings square and true . . . mesh uniform. It is woven in a mill which specializes in weaving brass, copper and copper-alloy wire cloth. The result is *quality*.

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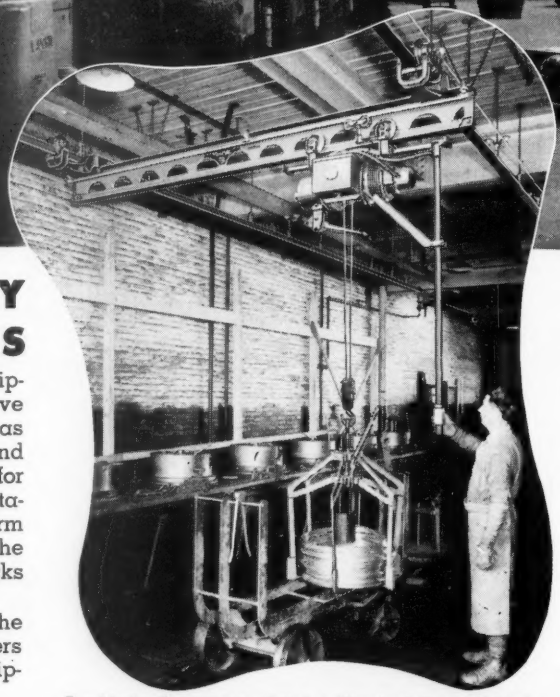
Atlanta	Cincinnati	Detroit	Los Angeles	New Orleans	Providence	Seattle
Baltimore	Cleveland	Houston	Milwaukee	New York	Rochester†	Waterbury
Boston	Dallas	Indianapolis	Minneapolis	Philadelphia	St. Louis	(†sales office only)

Modern slotted blocks are easily stripped with Cleveland Tramrail internal block-stripping equipment.

The FAST, EASY WAY OF STRIPPING BLOCKS

With an overhead Cleveland Tramrail block-stripping crane or carrier, it's a fast, easy job to remove wire from wire-drawing blocks. This equipment has been especially designed for the work by Cleveland Tramrail. The carriers are equipped with rigid arms for easy pushing of carrier and bridge. A push-button station is conveniently located in the lower end of the arm for instant operation of the electric hoist. If desired, the hoists may be mounted on a turn-table to serve blocks on two sides of an aisle.

For many years, Cleveland Tramrail has been the leading supplier of block-stripping cranes and carriers to the wire industry, for both internal and external stripping. Hundreds of such units are in operation.



For blocks that are not slotted a Cleveland Tramrail block-stripping crane with external stripper makes it a simple task to remove the wire.

GET THIS BOOK!

BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

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THE CLEVELAND CRANE & ENGINEERING CO.
9215 EAST 288th ST. WICKLIFFE, OHIO

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OVERHEAD MATERIALS HANDLING EQUIPMENT

STEELSKIN Lubricants

—and how to use them...

This is the first in a series of advertisements cataloging the complete line of Steelskin Lubricants. Keep this for handy reference.

No. 1 of a series

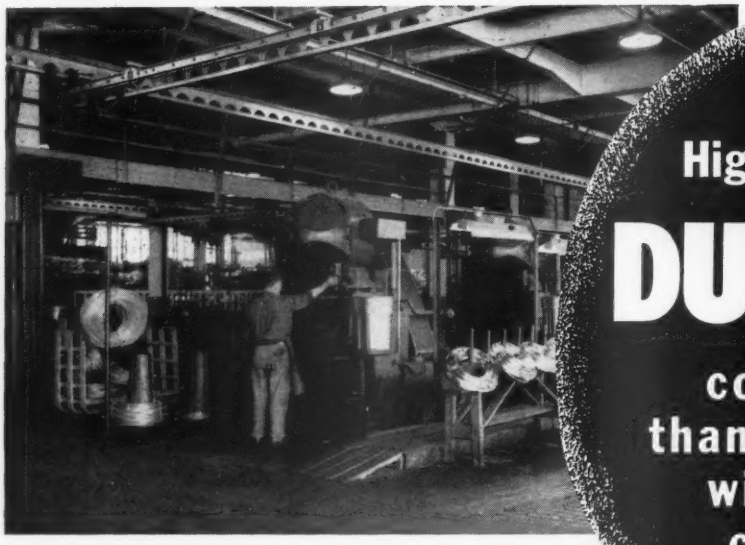
PRODUCT	SHIPPING INFORMATION	USES
CXH POWDER	300# Net FIBER DRUM	For drawing rod and wire (coated with lime or STEELSKIN W-Coating) for springs, nails, galvanizing, tire bead, rope, poultry netting, screen cloth, etc.
REDSKIN CRYSTALS	400# Net FIBER DRUM	For the economical production of an adherent and uniform copper-coating on both high- and low-carbon wire without the use of an electric current.
W-BRIGHT GREASE	440# Net STEEL DRUM	A one-hole grease for producing extra-clean, extra-bright finishes using a light-lime coating.
#5 POWDER	230# Net FIBER DRUM	A general-purpose, dry-drawing lubricant for limed wire and rod, both high- and low-carbon. The finished coating is more readily removed.
JD PASTE COMPOUND	440# Net STEEL DRUM	An emulsion-type lubricant for wet-drawing steel—liquor-finished or galvanized, copper, bronze, brass, and other alloys.
SS POWDER	300# Net FIBER DRUM	Specially developed for drawing stainless steel.
GF POWDER	260# Net FIBER DRUM	A recent development for drawing heavily-limed wire going to ultra-high-speed nail machines.
GALVASEAL WAX	440# Net STEEL DRUM	Used at low concentrations in the last pan of the galvanizing unit to provide a protective film. It also helps form more compact bundles.

Steelskin LUBRICANTS

R. H. MILLER

Company, Inc., Homer 1, N. Y.

SOAPS AND COMPOUNDS FOR WIRE DRAWING, TUBE DRAWING, DEEP DRAWING AND STAMPING.



High-Performance DURPONS*

cost no more than conventional wire-drawing compounds

High-performance DURPONS are altogether superior wire-drawing compounds, developed after many years of Nopco research devoted to producing outstanding lubricants for the wet-drawing of nonferrous wire, rods, and tubes.

With Durpons, you gain two extremely important advantages, because incorporated into each are:

1. a buffer which tends to hold the pH of the drawing solution up . . . thus making the bath last longer, since the emulsion does not break;

2. a chelating (or sequestering) agent which ties up the metal ions so that they cannot react with soap to form insoluble metallic soaps. Flotation of metal particles is thus held to a minimum, and the bath kept clean.

You'll find Durpon compounds not only provide optimum lubrication, but retain their initial degree of performance for *twice as long* as conventional compounds. By using Durpons, you'll *reduce your drawing costs considerably,* because superior Nopco* products *cost you no more* than conventional wire-drawing lubricants.

We have immediately available:

DURPON — for intermediate gauge wire

DURPON L — for heavy wire, rods, and tubes

DURPON FW — for fine wire

If you draw nonferrous materials — such as copper and copper-coated rods and tubes — it will profit you to investigate. Fill out the coupon today. A technical bulletin and trial-size order will be sent you promptly.

*Reg. U. S. Pat. Off.

NOPCO
EVOLVED THRU RESEARCH

NOPCO

CHEMICAL COMPANY Harrison, N. J.

Branches: Boston • Chicago • Cedartown, Ga. • Richmond, Calif.

NOPCO CHEMICAL COMPANY, Harrison, New Jersey

Gentlemen: Please send me a copy of your Bulletin giving information about Nopco DURPON Drawing Compounds.

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

WIRE INSULATING EXTRUDERS

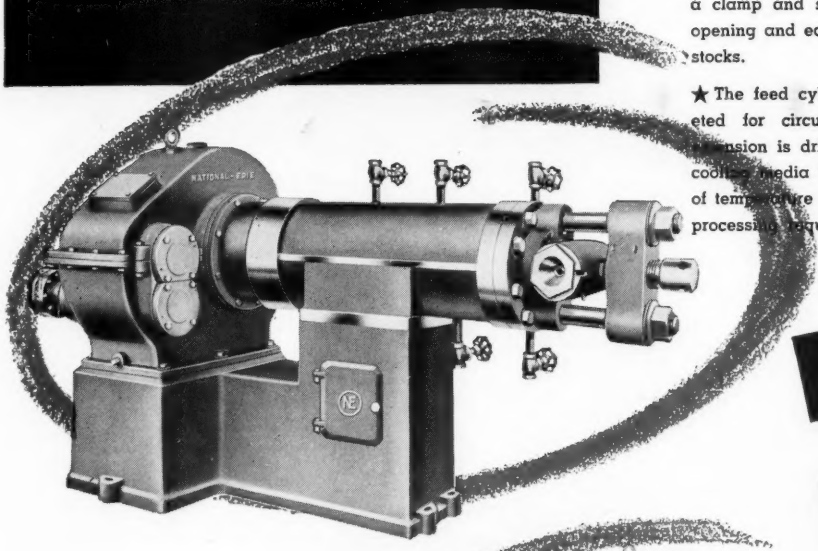
The National Erie extruder has been developed, after years of experience in design and use, into a machine with outstanding production features:

★ Drive gearing with precision cut gears and heavy duty thrust bearings of ample capacity have proved the superiority of National Erie design through years of trouble-free operation.

★ Anti-corrosive abrasion resistant cylinder liners and Stellite tipped screws insure long life.

★ The plastics insulating extruder is equipped with a clamp and swing type head which permits quick opening and easy access for cleaning when changing stocks.

★ The feed cylinder on the plastics machine is jacketed for circulation of water and each cylinder extension is drilled for circulation of the heating and cooling media for zone temperature control. A choice of temperature control systems is available to suit the processing requirements of any material.



FOR PLASTICS

FOR RUBBER

A typical 4½" plastics insulating machine is illustrated above. A typical 3½" rubber insulating machine is illustrated at the right. Both of these machines are available in sizes 1½", 2½", 3½", 4½" and 6". Other sizes available as special designs.

NATIONAL ERIE STAFF JOINS HALE AND KULLGREN, INC.

The engineering organization of National Erie, including personnel, drawings and records, have transferred to the offices of Hale and Kullgren, Inc., at 613 East Tallmadge Avenue, Akron, Ohio, and are available to you for prompt service on your processing problems. Complete service on parts and information for all existing National Erie equipment is available.

Complete service on National Erie equipment

SALES • ENGINEERING • MANUFACTURING

HALE AND KULLGREN INCORPORATED

P. O. BOX 1231 • AKRON, OHIO

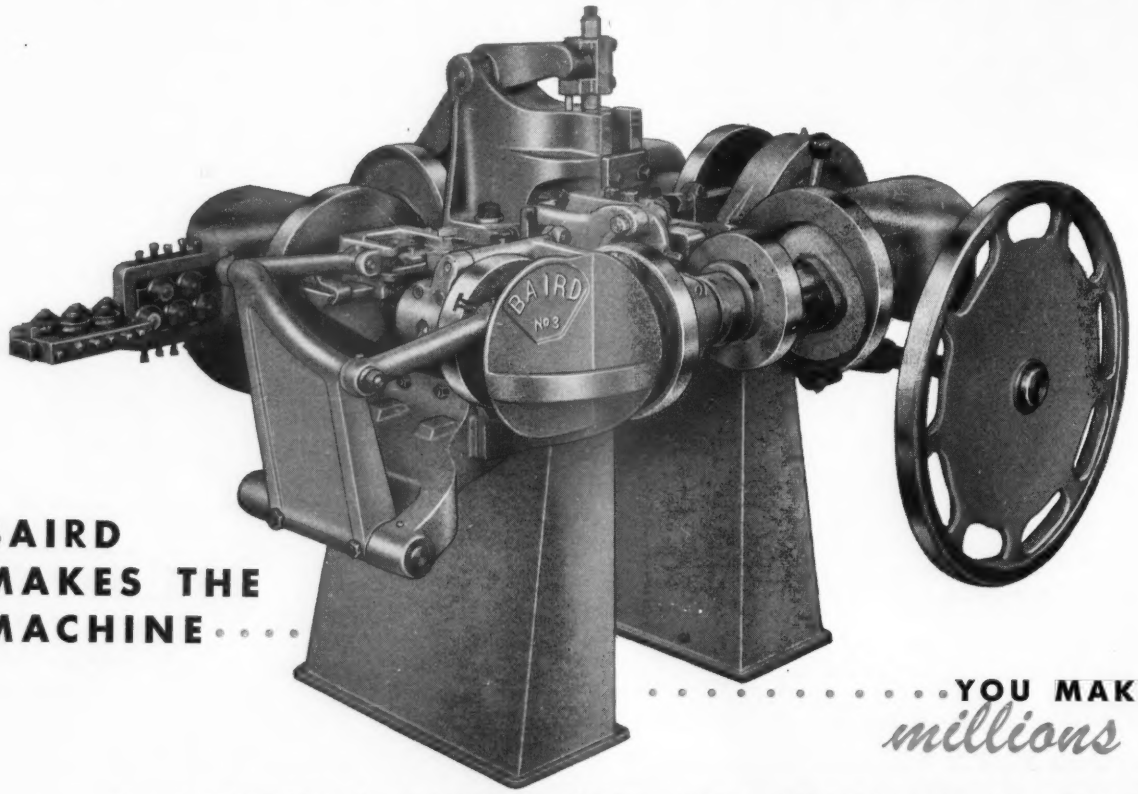
Aetna-Standard

THE AETNA-STANDARD ENGINEERING CO.
PITTSBURGH, PA.

Plants in Warren, Ohio
Ellwood City, Penna.

ASK **BAIRD** ABOUT IT!

HIGH PRODUCTION TOOLING



BAIRD MAKES THE MACHINE . . . .

. . . . . YOU MAKE *millions*

. . . OF ACCURATELY FORMED WIRE AND RIBBON METAL PARTS

The Baird automatic Four-Slide Machine produces an extremely wide variety of articles made of any commercial wire . . . round, half-round, square, or flat . . . at highest speeds. It takes coiled wire from a reel, straightens, feeds, and cuts off the required length . . . then forms and ejects the part produced. Eight sizes handle shorter wire lengths; three sizes take longer lengths to 32½".

By means of special attachments, the versatility of the machine is further extended to include the making of round wire and ribbon metal rings, secondary cut-offs, lettering, and other operations.

The detailed and complete story, with specifications, is told in our new Four-Slide Bulletin. If you require hundreds of thousands or millions of wire units to ½" dia., or flat ribbon metal products to 1½" wide . . . this is your profit-making machine. Send for bulletin.

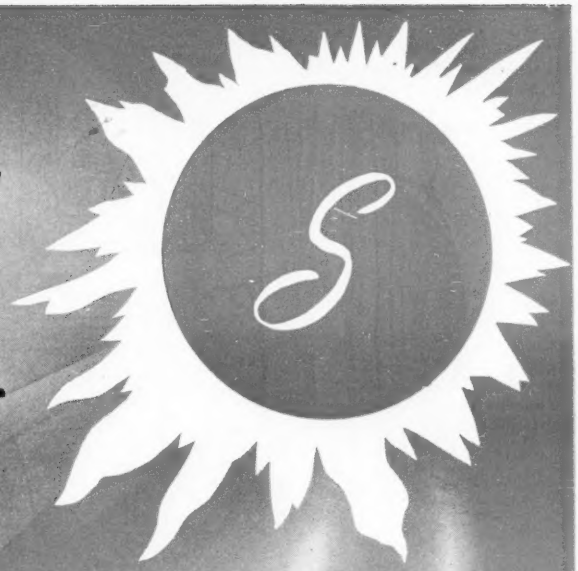
3BA53

the **BAIRD MACHINE COMPANY**
STRATFORD • CONNECTICUT

AUTOMATIC MACHINE TOOLS • AUTOMATIC WIRE & RIBBON METAL FORMING MACHINES • AUTOMATIC PRESSES • TUMBLING BARRELS

STAYS BRIGHT AS DAY ! WITH

STANDARD'S BRIGHT WIRE COMPOUNDS



STANDARD INDUSTRIAL COMPOUNDS COMPANY has pioneered most of the outstanding contributions to better wire drawing through better lubricants. Consult with **STANDARD** for the solution of your difficult problems. We welcome your inquiries.

STANDARD WIRE DRAW NO. 15

A new and different Compound for wet drawing, made from new and different materials that have a natural affinity for metals, a natural wetting-out characteristic, without the addition of a wetting agent.

Protects the wire from oxidizing for considerably longer periods than conventional compounds. Preserves the bright finish on copper coated or liquor finished wire and prevents tarnish on copper or brass wire for longer periods of time.

Below are some of the advantages of this compound:

A. Small amounts needed. Due to the natural affinity for metal small amounts of this compound are needed. Draws high carbon wire at high speeds with a fat content as low as .30 per cent, because of this affinity for metal and the natural wetting-out characteristics.

B. Low pH value.

C. Protects steel wire from rusting and copper coated and liquor finished steel wire from oxidizing. Protects copper and brass wire from tarnishing.

D. A clean compound. Keeps equipment clean and drawn wire has a clean finish.

Contact one of our representatives below or our home office for details on this new compound and a sufficient quantity for test will gladly be furnished.

Bruce W. Siemon
2400 Morrow Pl.
Pittsburgh 34, Pa.

John A. Moritz, Jr.
4600 W. Ferdinand St.
Chicago 44, Ill.

Earl A. Bowers
5536 Lisette
St. Louis, Mo.

Charles P. Orr
Caledonia Park
Fayetteville, Pa.

Standard Industrial
Compounds Co.
Millbury, Mass.
Arthur J. O'Mara

wire drawing lubricants *Standard* INDUSTRIAL COMPOUNDS CO., INC.

4600 WEST FERDINAND STREET
CHICAGO 44, ILLINOIS

"Charlie—what do you suppose happens to boys who don't use **Swift's Soaps?"**

Swift's complete line gives you the *right* soap for most wire drawing jobs. Swift's Soaps are uniformly dependable because all are produced to rigid quality specifications. They offer efficient lubrication with minimum dusting.

Swift's research leads to better soaps

Swift's technical researchers work constantly to maintain high product quality . . . to develop even better soaps for industry.

Swift offers prompt, resourceful delivery

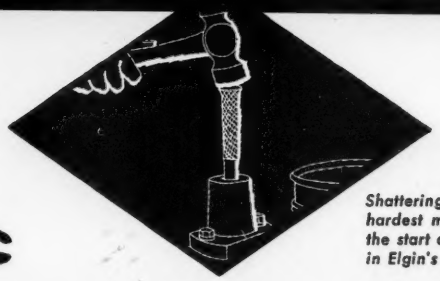
A Swift distribution point is near you. Strategic locations from coast to coast offer you fast, economical delivery on these and other fine Swift's Soaps:

Powdered White Ribbon • Guaranteed Powder • Snap Heavy Duty Wire Drawing Powder No. 282 • No. 559 Powdered Soap

Call **SWIFT** first for **SOAPS**

SWIFT & COMPANY
Soap Department, Chicago 9, Illinois

How a better abrasive begins



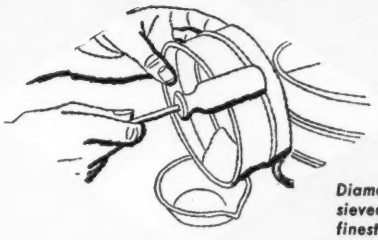
Shattering pure diamond bort, hardest material known, at the start of the crushing process in Elgin's laboratories.

Here is how all Elgin Diamond begins . . . in an $8,000 handful of pure diamond bort. For more than 10 years, every step of production, from bort to finished DYMO compound has been completely performed in the Elgin Diamond laboratories, under the control of Elgin technicians . . . a unique production arrangement permitting maintenance of absolutely rigid quality standards.

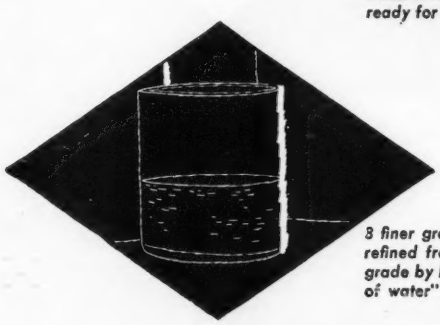
Results in hundreds of industrial applications have proved that DYMO finishing is the sure way to reduce costs and produce a better finish every time . . . in less time! Write for specific application data today.

Every day, more and more leading producers find that it's best to FINISH WITH DIAMOND . . . ELGIN DIAMOND.

Ask for a free demonstration!



Diamond powder is mechanically sieved into ten grades. The finest sieve grade shown here is ready for further processing.



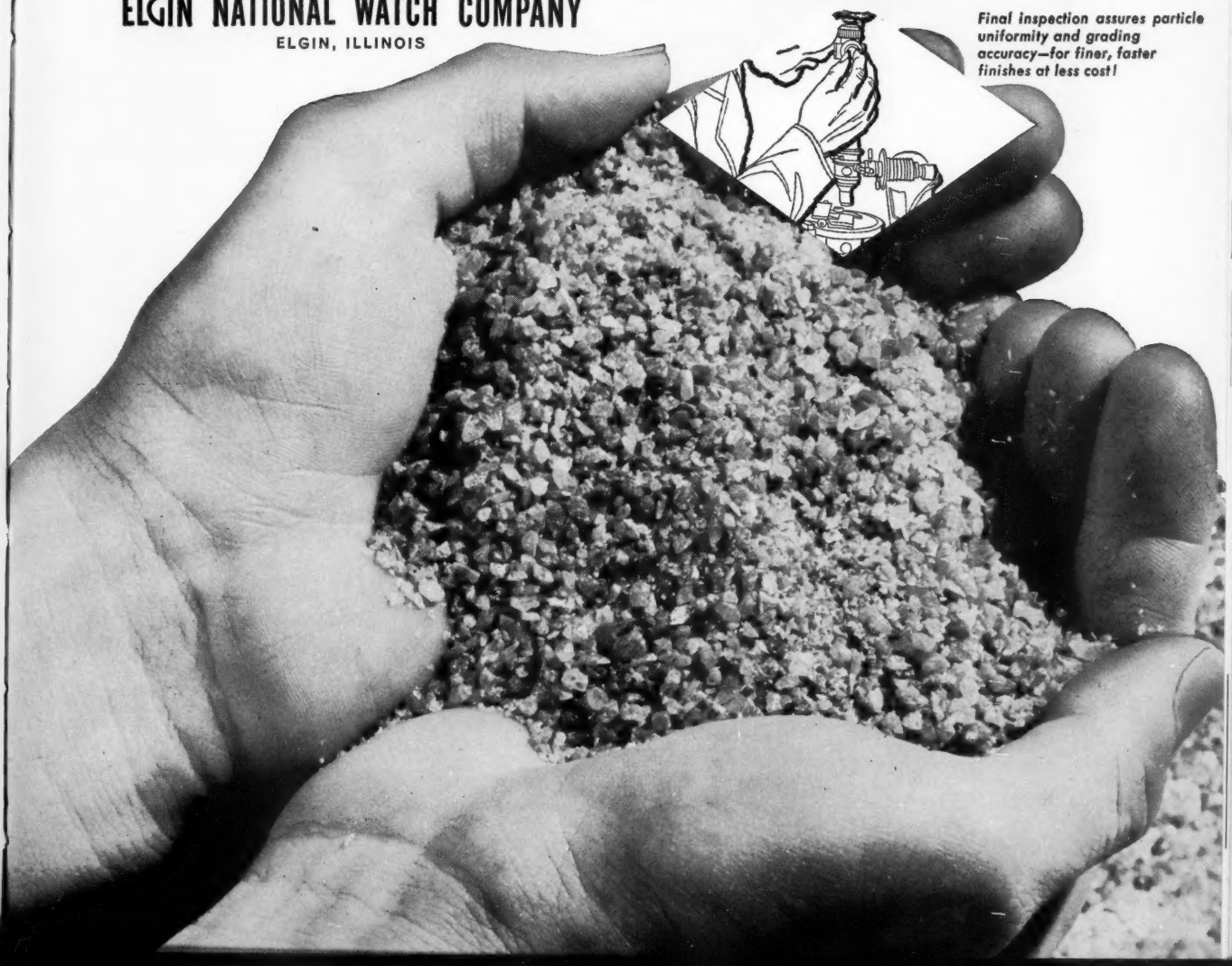
3 finer grades are further refined from the finest sieve grade by Elgin's "layers of water" process.

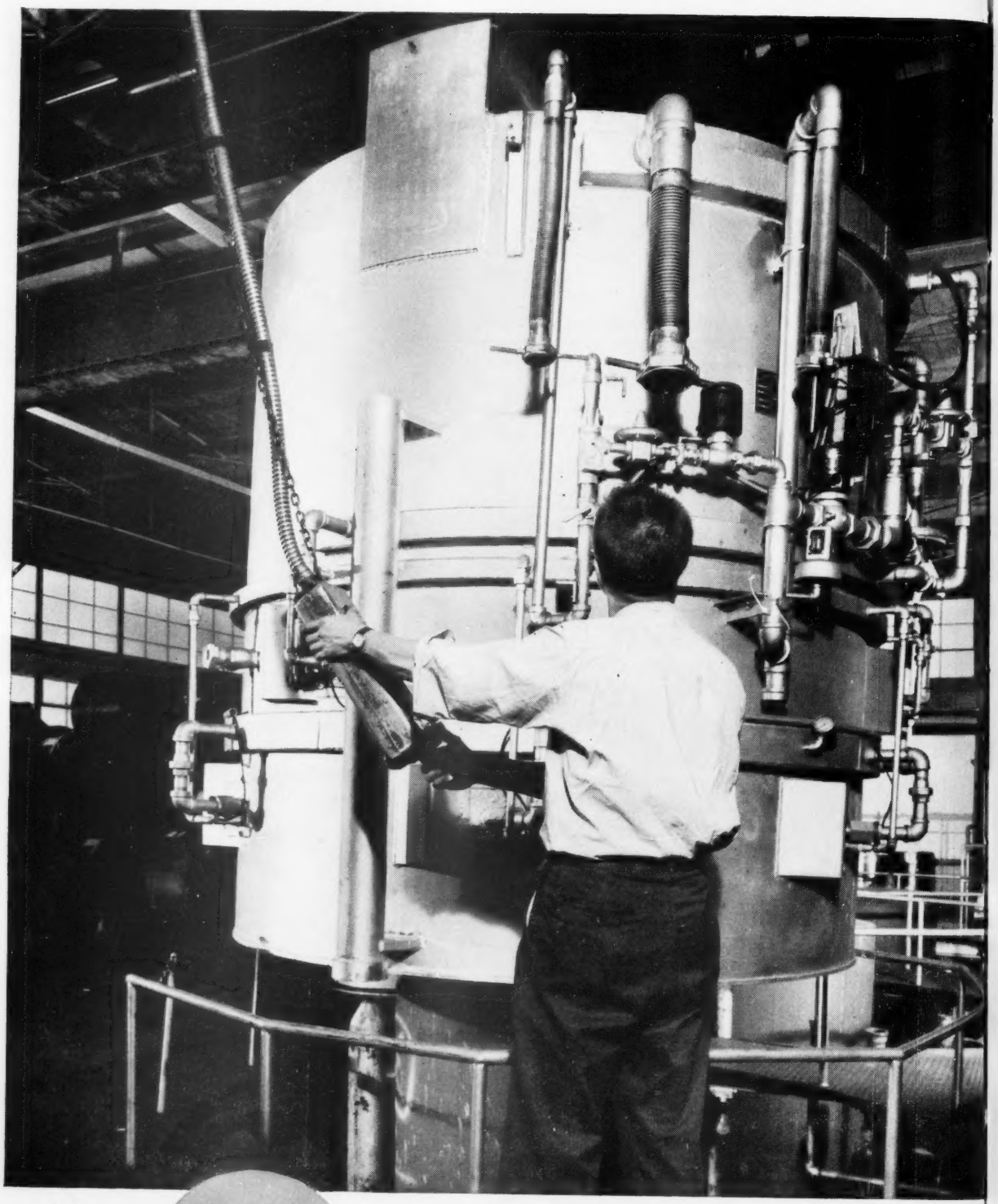
ABRASIVES DIVISION

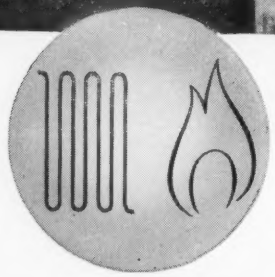
ELGIN NATIONAL WATCH COMPANY

ELGIN, ILLINOIS

Final inspection assures particle uniformity and grading accuracy—for finer, faster finishes at less cost!







IF YOUR PRODUCT CALLS FOR HEAT-TREATING . . . IT CALLS FOR A WESTINGHOUSE FURNACE . . . *GAS OR ELECTRIC.*

"Top-quality control with new furnace"

says . . . Rodney Metals, Inc.

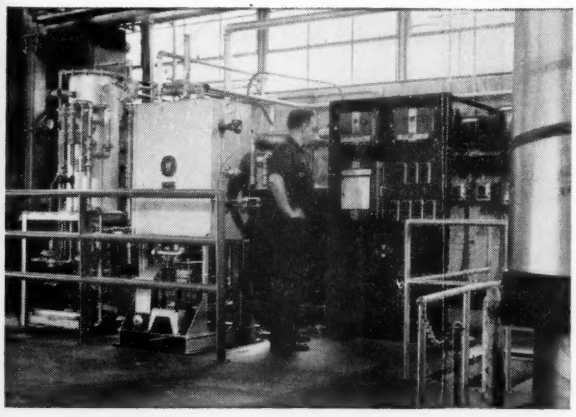
"Before acquiring our Westinghoue Bell-Type Furnace we had to depend on outside sources for the bright annealing of our steel stock. This would frequently result in costly delays. Now that we have our own furnace we avoid all breakdowns of production schedules.

"In a matter of hours, with our Westinghouse integrated operation, our sheet steel warehouse can supply any specific gauge and hardness to the parts manufacturing operation of our affiliated company, Modern Venetian Blinds, Inc. To maintain the high-quality standards of Modern's venetian blind hardware products, it is mandatory that our steel, after annealing, be of uniform hardness and "bright"—free from scale. We have been able to maintain this top-level quality control with our Westinghouse Bell-Type Furnace."

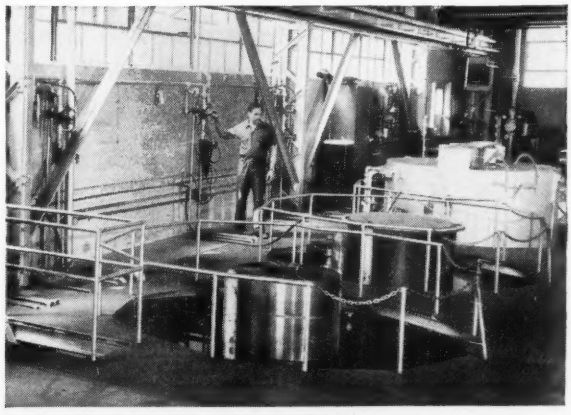
Investigate Westinghouse Heat-Treating Furnaces. Whether it be for your production line, toolroom or laboratory, you'll get the heat-treating flexibility you need and want with Westinghouse Heat-Treating Furnaces . . . GAS or ELECTRIC.

For more information regarding Westinghouse Heat-Treating Furnaces, write today for your copy of the 40-page booklet, *Harnessing Heat* (B-5459) Westinghouse Electric Corporation, Industrial Heating Department, Meadville, Pennsylvania. J-10399

YOU CAN BE SURE... IF IT'S Westinghouse



Exogas® atmosphere generator and control panel used in conjunction with the Westinghouse Bell-Type Furnace. This generator and control panel give constant atmosphere control and absolute temperature reliability.



This is a three-base installation with one Bell, allowing continuous operation. One batch being annealed; one batch cooling under hood; a third batch unloading from base.

NOW! INFINITE FEED CHANGES AND CONTROL --- INSTANTLY -- ACCURATELY -- ECONOMICALLY!

New!

VARIABLE SPEED DRIVE

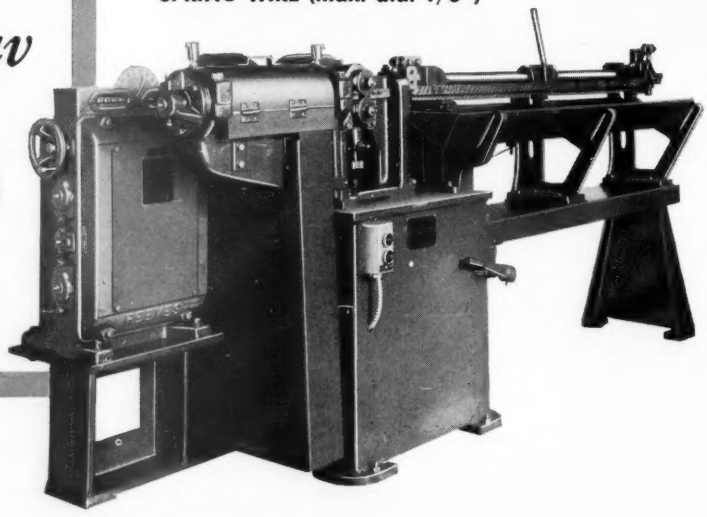
SHUSTER *1av*

Automatic

WIRE STRAIGHTENING & CUTTING MACHINE

BASIC WIRE (3/32" to 1/4")

SPRING WIRE (max. dia. 1/8")



- **Geared to feed any speed from 50 to 200 feet per minute.**
- **Capacity 3/32" to ¼" dia. basic wire; to ⅛" Spring wire.**
- **Immediate selection of the r.p.m. best suited for the work and the needs of the operator.**
- **One machine to straighten and cut wire of different sizes, different alloys, different tempers.**
- **Once set, constant speed is maintained in spite of possible load variations.**
- **On-the-job-adjustment of speed to compensate for any variations in wire coil. Maximum productivity.**
- **Simple, economical operation. Trouble-free maintenance.**

WRITE FOR

BULLETIN No. 53

METTLER MACHINE TOOL, INC., New Haven, Conn.

Manufacturers of SHUSTER (Est. 1866) Automatic Wire Straightening and Cutting Machines.

NEW YORK OFFICE: Eleven Broadway, Tel: WHitehall 4-5480

Representatives in all principal cities and in foreign countries.

WIRE and WIRE PRODUCTS

reaches many prospects

YOUR SALESMEN DON'T KNOW!

No matter how big you are, the odds are you don't know all your actual prospective customers.

If your company is small, it is even more important to be "calling" on your prospects and customers regularly through advertising.

Your advertising in Wire and Wire Products will be seen by many people in the plants you wish to "sell" whom your salesmen never would see, yet who specify, actually buy or who influence decisions on products to be purchased. Your advertising is bound to be of immeasurable value to you, too, in paving the way for a good reception for your salesmen when they do call. And the field's buying power is tremendous!

WIRE AND WIRE PRODUCTS circulation, is all paid. We have no agents, offer no premiums or make special inducements to get circulation, except the value of the editorial contents in itself—yet our renewals have averaged 97% or better for many years. That's why it is a good and forceful advertising medium for all concerns who have products to sell to the wire industry.

● GET YOUR SHARE OF THE BUSINESS . . .

● ADVERTISE IN WIRE AND WIRE PRODUCTS . . .

● SEND FOR ADVERTISING RATES TODAY . . .

WIRE AND WIRE PRODUCTS

453 MAIN STREET **STAMFORD, CONN.**

Can our metallurgists save YOU money?

IF you're having steel wire trouble, we'd like to have the chance to help you. Our metallurgists are real experts at solving problems involving the use of manufacturers wire. Sometimes they can suggest the use of a different wire that saves time, or money—or both—for the manufacturer. Sometimes they can come up with a change in fabricating technique that results in a real cost reduction. And, if you're in difficulty because you need a special kind of manufacturers wire, our staff will work with you to develop a new wire that will meet your exact specifications.

We've had more than a century of wire-making experience. Today, as the "Wire Headquarters of the World" we supply our customers with more than 400 different types of U·S·S American Manufacturers Wire . . . and all of it is of uniformly high quality.

Consultation is without charge or obligation—just call our nearest sales office.

If you make it of wire... make it of the best!

U·S·S AMERICAN MANUFACTURERS WIRE

AMERICAN MANUFACTURERS WIRE

AMERFINE—*High-quality fine wire.*

AMERSPRING—*music steel spring wire.*

AMERLOY—*alloy heading wire.*

AMERTEMP—*heavy-duty oil-tempered wire.*

AMERHEAD—*uniform heading wire.*

AMERSTITCH—*extra-tough metal stitching wire.*

USS TRADE MARK

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS

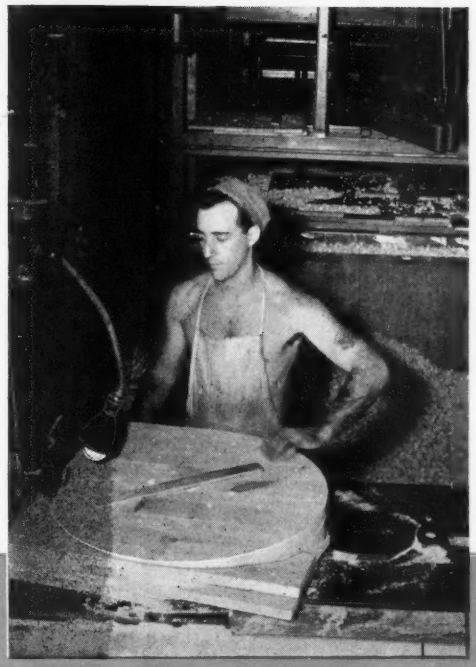
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

UNITED STATES STEEL

ARE YOUR WOOD REELS PRECISION MADE?

Reels made by Bridge are. They're manufactured in a modern plant that is wholly devoted to making only one product—WOOD REELS.

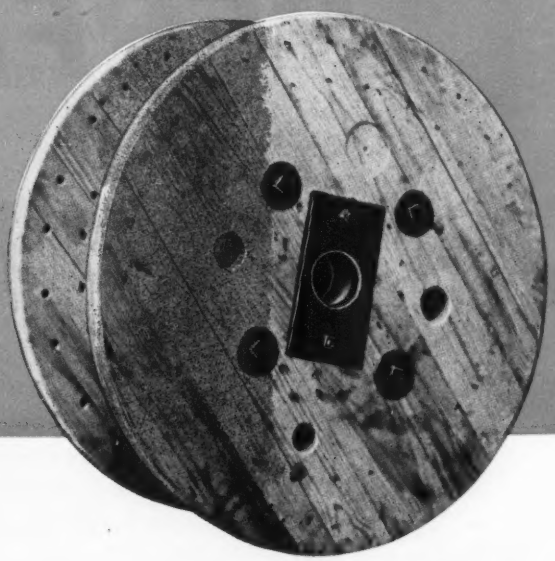
Straight-line production methods and automatic tools and jigs assure you of well and accurately made reels that conform exactly to your specifications. That's why they are of uniform high quality, as well as being low in cost. Try BRIDGE REELS!



Right: Cutting out reel head.

YOUR SPECIFICATIONS FOLLOWED

Every wire mill has its own reel specifications. Bridge's production system is designed to meet them rigidly and to furnish you with strong reels that will withstand severe handling. If you specify a delivery date—that will also be met on schedule. BRIDGE gives you what you order.



PLUS A SPEEDY SHIPPING SERVICE

Bridge delivers by truck to your door within a radius of 200 miles from the plant. Fast freight will bring you Bridge reels in 5 days or less east of the Mississippi.

BRIDGE
MANUFACTURING CO.
HAZARDVILLE, CONN.
Phone Thompsonville 3375

WOOD REELS FOR SHIPPING AND SHOP

12" to 96" in diameter; knocked down or assembled; returnable or non-returnable; wood heads for steel drums.

Let us quote on your reel needs. Send your specifications. Better yet, visit our plant and see how and why our reels are made so well at so low a cost.

WARREN WIRE

STRANDS ANY NUMBER OF WIRES WITH *PERFECT CONCENTRICITY*

This may be the answer to your wire problems! Warren Wire now produces a complete, superior line of bunched strands of 7, 10, 16, 19, 26, 41 and 65 wires with such perfect concentricity they can pass through dies of one mil clearance. Even straight bunch stranding can be handled on an extruder with the same minimum clearance as solid wire. Such perfect lay and constant dimensions are the result of a successful combination of Warren Wire "know-how" and the use of the single twist Cook Buncher . . . specifically designed for this exacting operation. Reeled 175 lbs., 300 lbs., or to your specifications. Samples and price list sent on request.

WW

WARREN WIRE COMPANY

Plant and Main Office: POWNAL, VERMONT

NEW YORK • SYRACUSE • NEW HAVEN • PHILADELPHIA • PITTSBURGH • CLEVELAND
DETROIT • CHICAGO • ST. LOUIS • ST. PAUL • LOS ANGELES • SAN FRANCISCO

Manufacturers of Plain Enamel, Nylon, Formvar, Teflon and Served Magnet Wires . . . Teflon Hook-up and Lead Wire . . . Tinned and Bare Copper Wire.

NATIONAL WIRE

(COLD ROLLED)

in Coils or Straight Lengths

COMPLETE METALLURGICAL SERVICE

Manufacturers of

SPRING WASHERS	RETAINING RINGS
ROUND EDGE FLAT WIRE	KEYSTONE SHAPED WIRE
SQUARE EDGE FLAT WIRE	SPECIAL SHAPED WIRE

Shaped Wire in Coils or Straight Lengths, Ferrous or Non-Ferrous.

LARGE OR SMALL QUANTITIES

Manufactured by

THE NATIONAL LOCK WASHER COMPANY

PRECISION SHAPED WIRE DIVISION

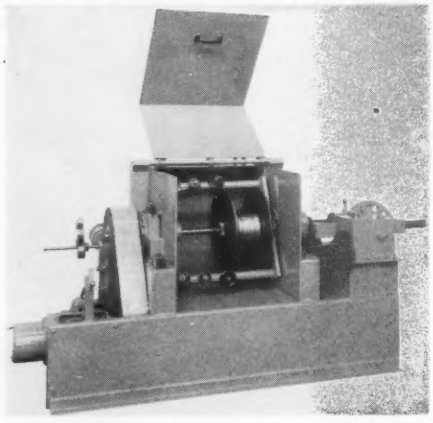
NEWARK 5, N. J. MILWAUKEE 2, WIS. U.S.A.

Attention . . .

PLASTIC AND RUBBER EXTRUDERS

of the Wire Industry!

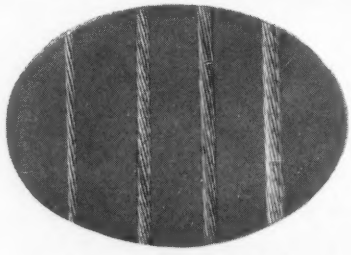
At last, it is now possible to strand any number of wires *with perfect concentricity.*



Shown at left:
COOK HIGH SPEED BUNCHER.
1400 twists per minute.
Reel Size: 21" x 8 1/2".
Reel Capacity: 350 pounds.

The Cook Manufacturing Company has now succeeded in producing a highly versatile bunching machine for the wire industry. This new COOK BUNCHER has successfully formed bunched strands of 7, 10, 16, 19, 41, and 65 wires with such concentricity as to enable its passage through an extruding die of only 1 mil clearance.

The illustration at the right is an example of 7, 10, 16, & 26 strands of #30 tinned copper. While the 7 strand is a concentric lay, the others theoretically are not; yet they are formed with perfect concentricity on the new Cook Buncher.



7/30 10/30 16/30 26/30

With this Cook Buncher, the wire industry has an extremely versatile machine. When used for straight bunch stranding the Cook Buncher produces bunched wire with such concentricity that the leader die used on an extruder would have as small minimum of clearance as used for solid wire.

Rope stranding is also possible with this machine without the addition of space eating back twisters. As an example, a rope strand of 7 x 7/30 tinned copper wires was formed on the buncher with perfect concentricity at a production rate of 7,000 ft./hr.

Write today for descriptive literature giving details of construction and performance of this high speed concentric bunching machine.

OTHER COOK EQUIPMENT

• Wire Drawing Machines • Bunchers • Twisters • Wire String-Up Machines • Enameling Take-Ups and Pay-Offs
• Enameling Machines • Cabling Machines • Spoolers • Tinning Take-Ups and Pay-Offs • Tinning Pots
• Wrapping Machines • Special Machinery

COOK MANUFACTURING COMPANY

265 NORTH 9th STREET **PATERSON 2, N. J.**

What To Look For In
DIAMOND DRAWING DIES

The Trade-Mark

"Roux"

—your assurance of diamond dies of *utmost roundness, accuracy and long life* — made with highest quality industrial diamonds, and specially selected by diamond experts for hardness, lasting quality and specific wire drawing needs. Roux selections are made from—

Brazilian diamonds— the hardest of all natural stones, that last longer in the drawing of steel, steel alloys, tungsten and other tough metals.

South African diamonds— second only to Brazilian in hardness, but extremely satisfactory for drawing copper, brass, aluminum and other highly ductile metals.

SIZE — SHAPE — HARDNESS

of paramount importance. Correct size is important, however, equal consideration must be given to the shape and hardness of the stone; factors having a very important bearing on both the cost and the quality of the finished Diamond Die.

LOWER COSTS *"IN THE LONG RUN"*

It's false economy to try and save on initial die costs. True, quality diamond dies cost more in the beginning but their long life of usefulness will actually save you money. *Roux Diamond Wire Drawing Dies are a sound investment.*

ROUX DIAMOND WIRE DRAWING DIES

If your present Diamond Dies are not giving maximum service, Roux can solve your problem; and there is no obligation for inquiring.

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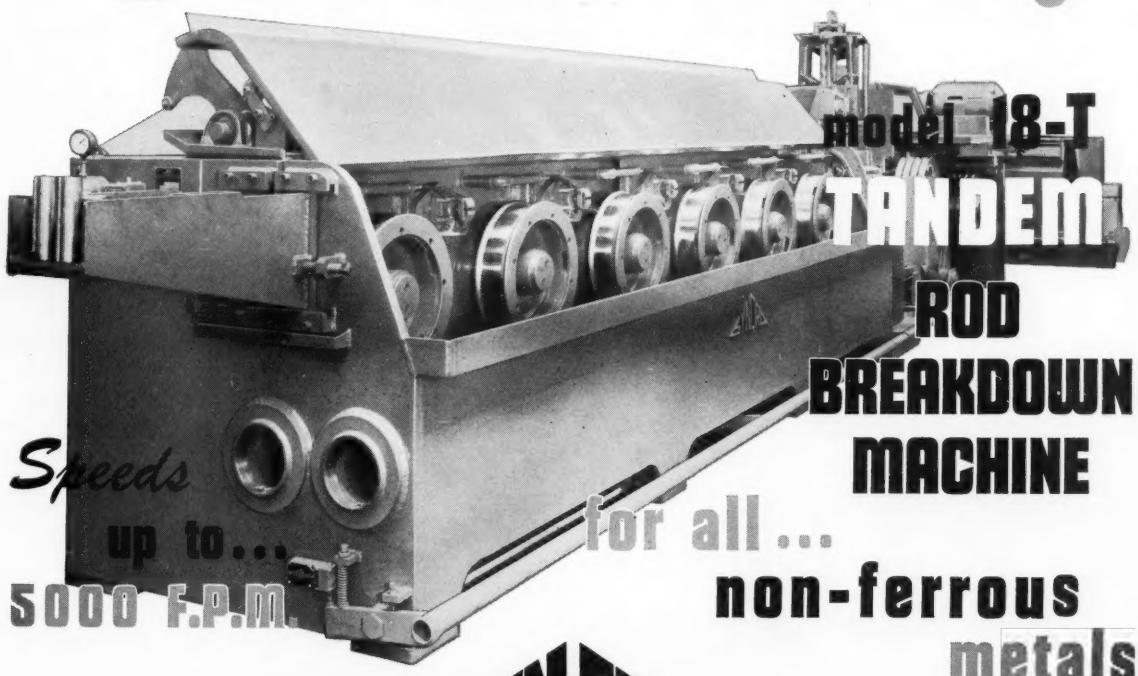

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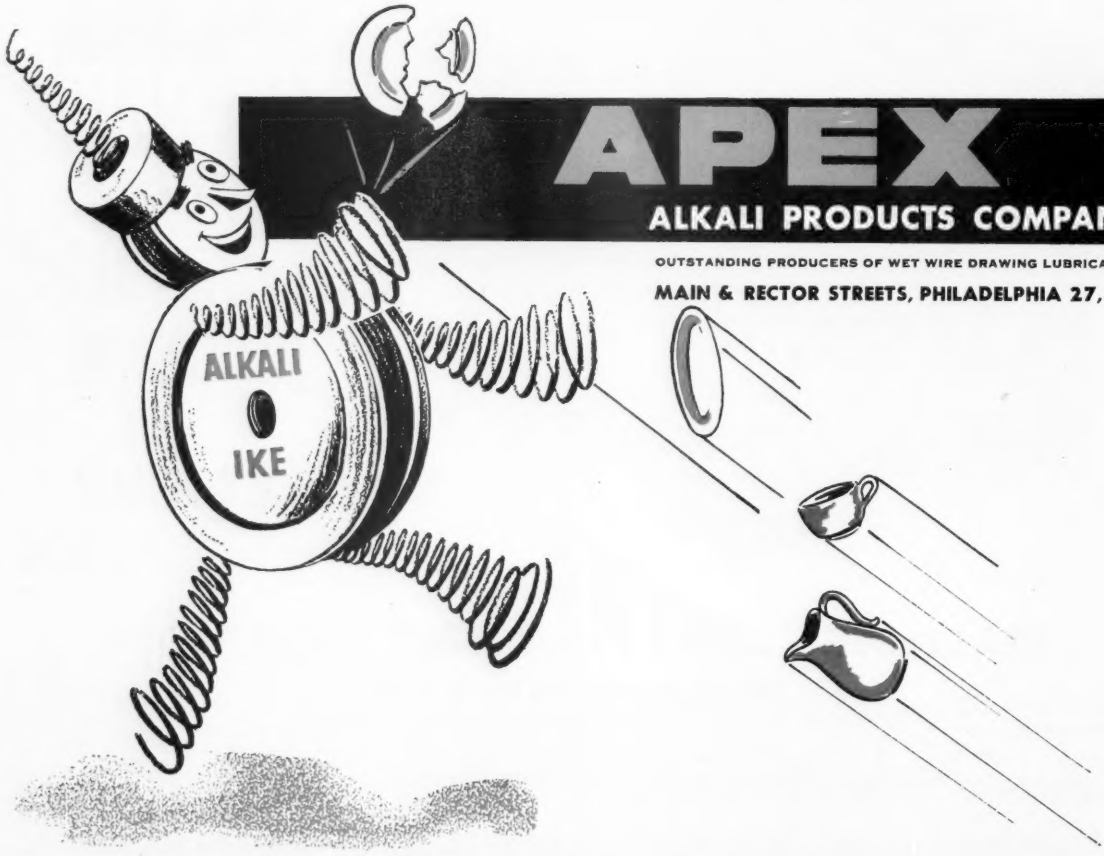

APEX

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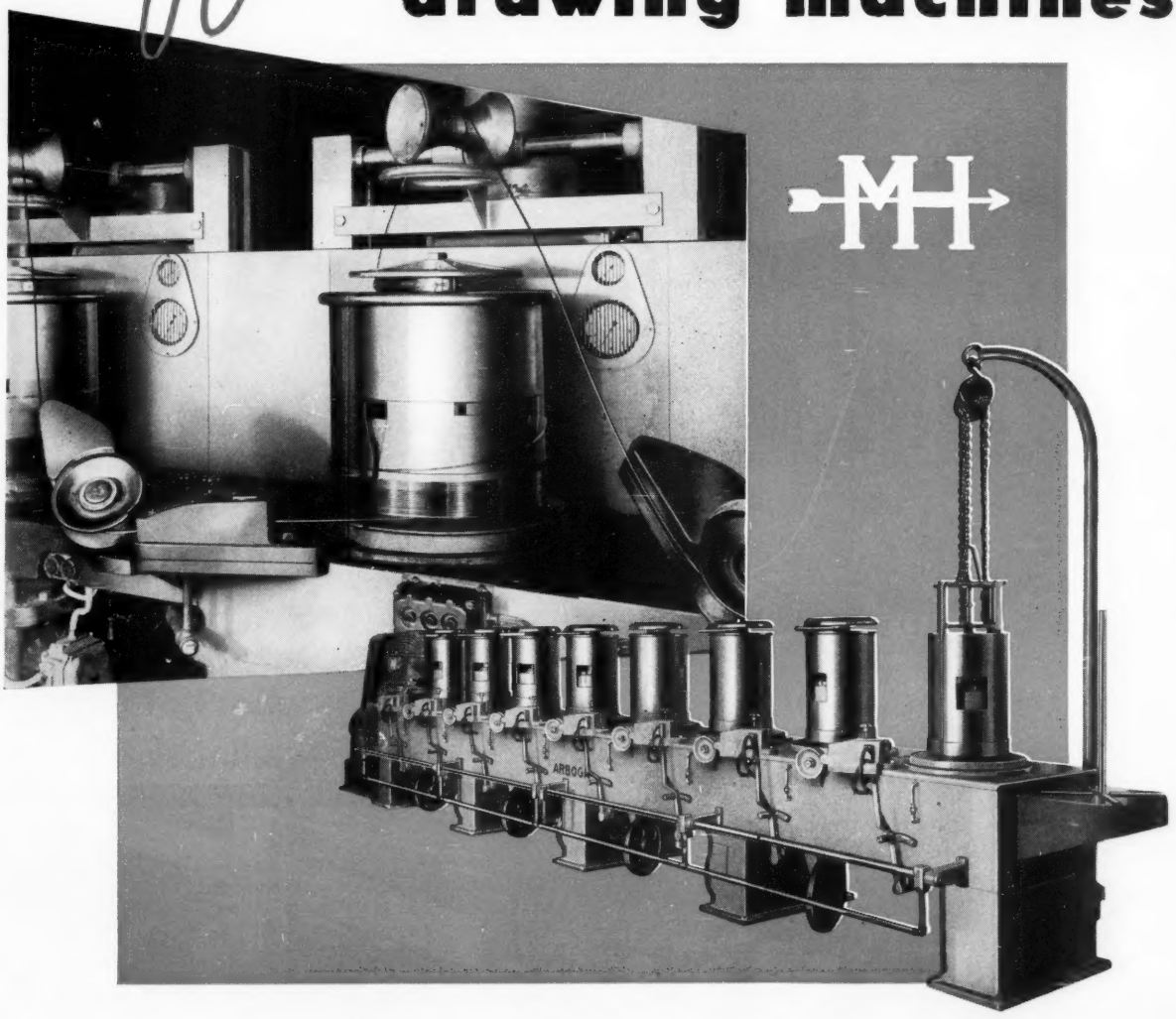
Wire drawing machines



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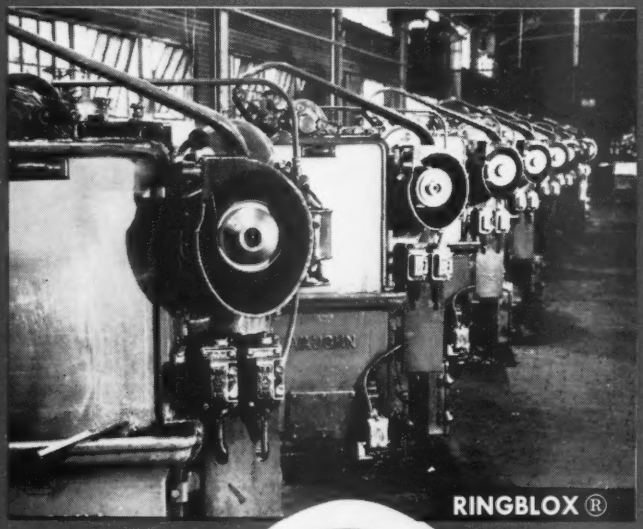

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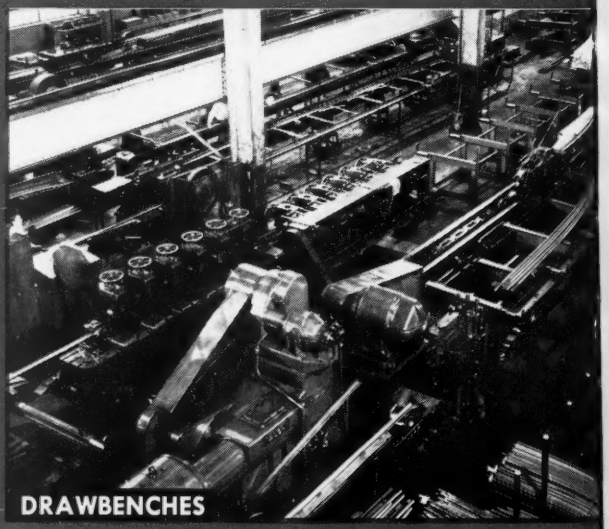

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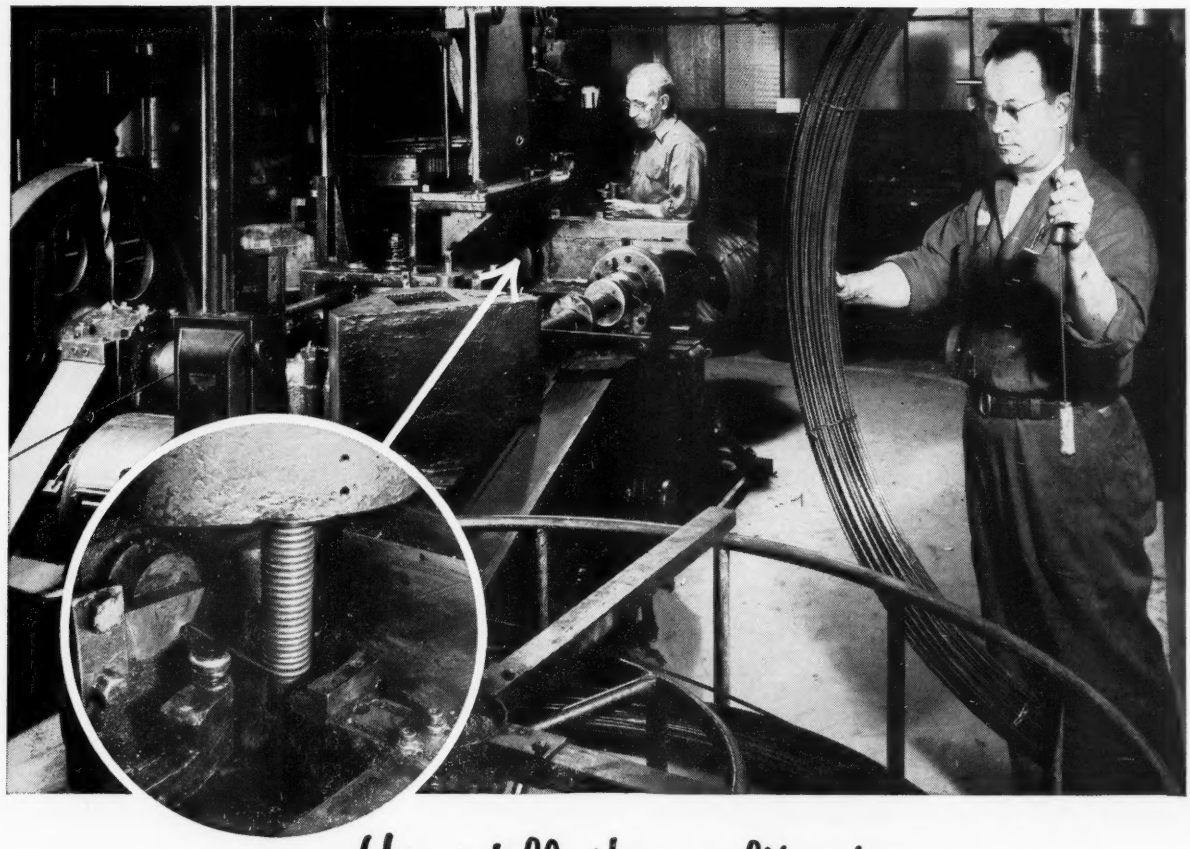

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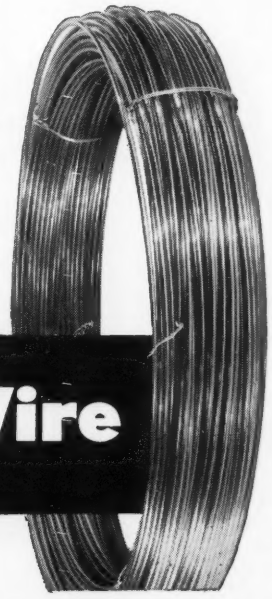

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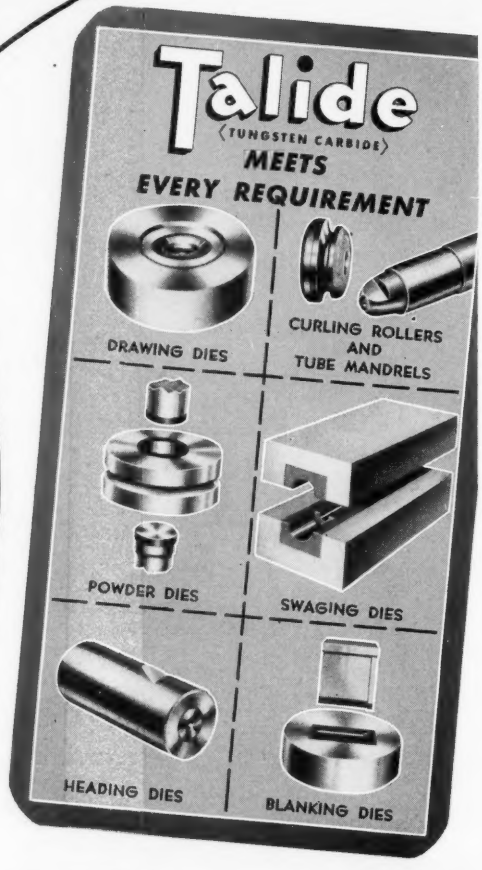

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The Wire Outlook

The theory practiced and preached by the two former Administrations that defense spending is necessary to a full and prosperous economy is one to which we do not subscribe. We do not believe that America was headed for a depression prior to the Korean war and that only a huge armament program could avert it.

We do believe that without the military program forced on us by circumstances, we would have been better off. We'd have had somewhat less employment and a smaller national income, perhaps, but a far sounder economy and a very much higher standard of living, based on a bigger volume of consumer purchasing. Historically, consumers spend about 90% of their disposable income.

Right now it is unthinkable that, during the years it will take to bring about peace and stability in this troubled world, we will be able to relax our defense efforts materially. As has been said before, when Government expenditures begin to decline and taxes are reduced, consumer buying will take up the slack and people as a whole will move toward those higher standards that might have been their present lot had not a whole series of New and Fair Deal blunders placed Russia in her present position of strength and aggression. In no event will defense spending terminate with embarrassing suddenness.

We are sure to have keener competition as time passes. Higher wages will most certainly result from present negotiations, but these are not expected to push prices up. The effect of the wage situation and competition will be to force producers to install equipment that will require fewer operators, thus offsetting rising costs. High prices, when goods are plentiful, tend to narrow markets. It is worth noting that in the consumer-goods fields, costly luxury items are going begging while medium and bargain-priced products are enjoying a boom.

For a short period in April and May the Government suspended its stock-piling of copper. The period was of brief duration. A new Defense Materials System for copper and copper-base alloys requires that producers of brass and copper wire mill and foundry products must set aside definite percentages of their receipts. These run 20% for brass rod, bar, shapes and wire and 26% for copper wire and electric wire products. Other categories vary from 15% to 55%.

For short term planning, one should count on a continued high volume of business. There are those who still look for a flattening out of the business curve late this year, but most businessmen are optimistic and the present rate of production indicates that a new high level for business is in the making for 1953. Even the record auto output, contrary to expectations, is being absorbed. General business activity is 7% above that for the same period last year, with consumer durables moving at boom levels.

Wire mills in general have no complaints. Upholstery spring wire orders extend into the third quarter. Cold heading wire users are seeking to extend inventories against active demand. Music wire is selling well. Both nail supply and demand are good and merchant wire sales are picking up. Wire for automotive use is in greater demand due to the extraordinary production schedules. Stainless and alloy wire demand is quiet and if any soft spots are to be noted, it is in fine wire and rope wire. This approaches a more normal state for the industry because in pre-war days the industry usually has experienced quietness in one or more quarters when demand rose in others.

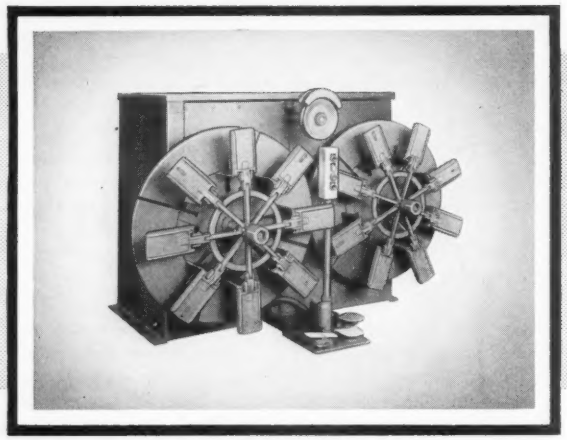
In July, when a great majority of the wire mills will shut down for vacations, the records for the month will not look good. This should be followed by a very generally active period of catching up. Even now, some buyers of wire are trying to build inventories to tide them over the period.

The dominant question in the minds of many industrialists still is the effect that policies of the new regime in Russia ultimately may have on business. We can gain some measure of comfort from the fact that whatever can be done to checkmate Communist aggression will be acted upon intelligently and thoughtfully, with no effort to prolong hostilities on the premise that it is essential to prosperity.

—from the Editor's Desk

HEAVY-DUTY DOUBLE-HEAD COILER CLASS E

TYPES EV AND EV-2



Coiler, Type EV

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Guide-wheel type of traverse is easily and infinitely adjustable for Wire Diameters and Coil Widths. Type EV-2 coiler has double traverse guide-wheels operating simultaneously for coiling large diameter or semi-rigid material that will not bend around an 8 in. diameter traverse guide-wheel.

DESCRIPTION

Coiler frame is of rugged, fabricated-steel construction with totally enclosed drive. Right or Left-hand assembly can be furnished. Coiler is furnished complete with A.C., 3-phase, Induction Motor and all controls, completely wired, ready to connect to power mains.

Built-in JLE Pneumatic Disk Brake, adjustable to 300 Ft.-Lbs. Torque at 100 P.S.I. air pressure, brings winding head to a quick, smooth stop when coil is finished.

Coiling Heads are JLE Collapsible Coiling Reels (see Cat. Sec. 7) which are moved into and out of winding and unloading positions by means of a JLE Pneumatic Cylinder controlled by a foot-operated 4-way air valve.

SEE CAT SEC 5E

See page 602 for a complete listing of JLE Products for the Insulated and Bare Wire Industry.

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DRAWING — ROLLING — EXTRUDING — FORMING — FABRICATING.

Vol. 28 JUNE, 1953 No. 6

Mechanical Handling at the Wire Mills of John A. Roebling's Sons Corporation

by John W. Maisch, Wire Mill Foreman
John A. Roebling's Sons Corporation
Roebling, New Jersey

The Wire Mills Division, John A. Roebling's Sons Corporation, was in a position similar to that of all industrial enterprises, as the hoped-for end of World War II approached. During the war, very little in the way of improving or changing facilities could be accomplished, as machinery and equipment was not available for civilian use. Management had expended all of its efforts to attain the greatest amount of production possible with the facilities available.

★ ★ ★

The end of the war would mean a change in products. The whole concept of business must be revised again. Instead of Maximum Production, the all-important factors of Quality, Service and Cost must receive the greatest amount of consideration. One of the greatest factors in rising costs is wages. It is in helping to reduce labor costs that planned materials handling shows to the best advantage. By conservative estimates, one dollar in every four paid in wages by manufacturing industries goes for handling materials.

★ ★ ★

In this paper which was delivered by the author at the Trenton Regional Meeting of The Wire Association on April 16, 1953, there is described the methods by which his company has secured greater efficiency in material handling so as to attain the greatest amount of production from the facilities available.

Mr. Maisch was born in New York City in 1925, is a veteran of World War II and graduated from Rensselaer Polytechnic Institute in 1950 with an M.E. degree. He joined Roebling in the same year.

In the Steel Wire Drawing Industry it is well known that, due to the nature of the product, a considerable amount of time is spent in handling material and transporting it from one operation to the next. With this in mind, the individuals concerned made a concentrated effort to eliminate or reduce the amount of handling required, and to eliminate or decrease the distance material had to be transported to succeeding operations.

★ ★ ★

There's no mystery attached to the practice of material handling. The whole thing boils down to the problem of how to move an item from point A to point B by the most efficient, economical means that can be devised. Efficiency is achieved by fitting this movement into the general flow of production, thereby cutting down on the number of employees involved and reducing the number of times the material is to be handled. Fewer hands, fewer stops and fewer moves result in increased economy of production. With these factors in mind, management formulated a long-range plan for improvements in both process and handling methods. Some of the methods outlined below are not yet fully in effect, but are scheduled for the near future. The plan itself is not fixed, but is continuously being revised to conform with changing conditions.

★ ★ ★

The first step in putting the plan into effect was to establish that the material should flow in a straight line, or as straight a line as possible under existing conditions, from time of receiving rods in the mill until the finished wire is shipped to the customer.

★ ★ ★

As shown in the following diagram, process points within the division are located in such a man-

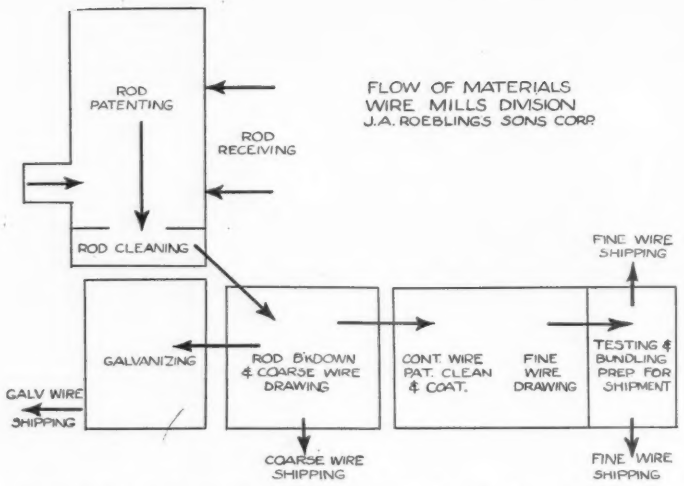

Figure 1—Flow lines of material. * * * * * * * * * * * *

ner as to facilitate the flow of the majority of products with a minimum of lost motion. Rods are received at the first process point and move through the various processes to the shipping areas in essentially a straight line.

★ ★ ★

The key to efficient production is a steady flow of material from basic components to the finished product. Adequate working stocks between processing units are important, but floor space is too valuable to waste on unnecessary storage. Steady and ready supply lines are the means of maintaining a steady flow of material. The less time an employee spends in waiting, finding or handling materials, the more time he has to devote to production. In this respect plant layout is important. In addition to assuring an efficient flow of production, layout of the machines should provide for easy access of materials handling equipment needed to service production points.

★ ★ ★

Following the progress of a typical product, .041" diameter rope wire serves to illustrate many of the material handling methods employed in the mills.

★ ★ ★

In the performance of the patenting operation, primarily all movements were formerly made manually; i.e., coils of rods or wire were rolled from storage to swifts and loaded on swifts manually, then unloaded from blocks manually and rolled to temporary storage. Coils of raw rod, averaging 380#, are now received from the Rod Mills in Roebling's own fleet of gondolas, spotted in the Heat Treating Department or rod storage shed and unloaded with hairpin hooks suspended from a bridge crane. From these points the rods are distributed by ram truck to the various rod heat treating furnaces.

★ ★ ★

Overhead electric hoists aid in loading the 380# coils of rod on double deck swifts. A rachet allows the upper half of the swift to remain stationary during the loading operation while the lower half continues to turn with the running coil. After the coil is loaded, the front end is spliced to the back end of the running coil. A novel device, called a "bullet", is slipped over the splice, permitting the use of a simple hook splice without danger of snagging on guides or catching adjacent rods. When the running coil has unreeled, the operator trips a release. The new coil drops to the lower half of the swift, leaving the upper half ready for the next coil to be loaded. This eliminates most

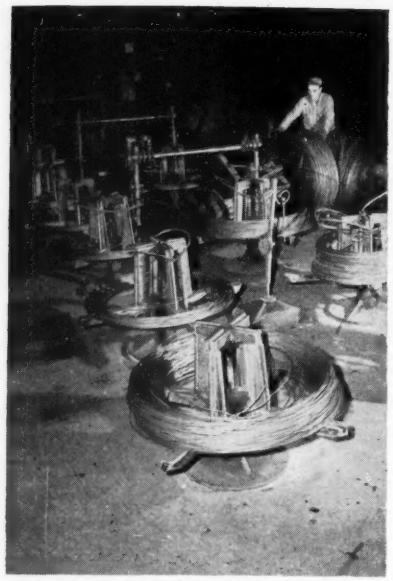

Figure 2—Manual loading of swifts. * * *

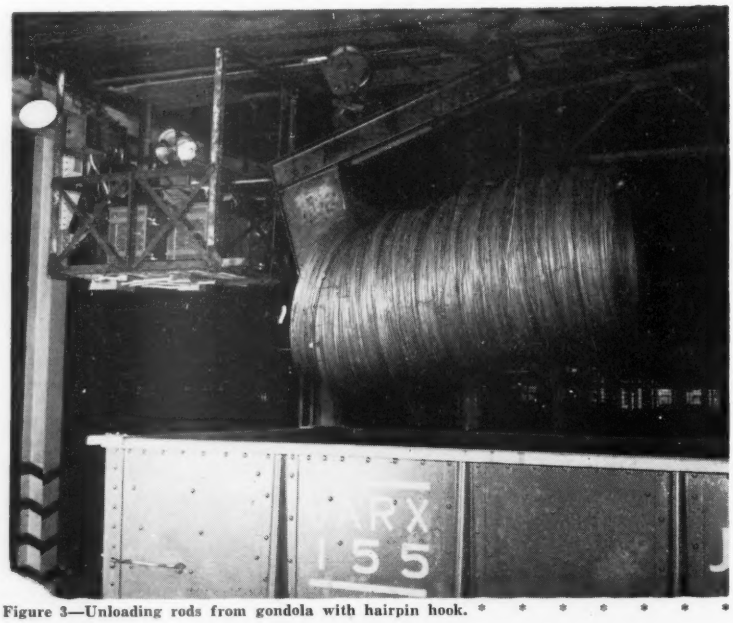

Figure 3—Unloading rods from gondola with hairpin hook. * * * * * * *

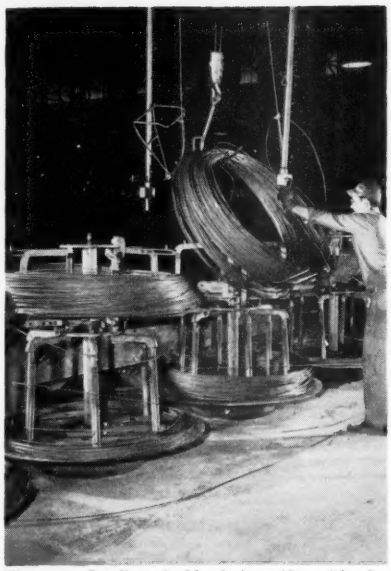

Figure 4—Loading double deck swifts with electric hoist.

of the safety hazards which existed with manual handling. The swifts are easily adjusted to handle the various coil sizes. The rods pass through the patenting furnace and are wound up continuously on take-up blocks. The 380# coils are stripped from the blocks and stacked for ram trucks with the aid of electric hoists. With this arrangement, four men now operate a furnace which formerly required a crew of seven.

★ ★ ★

In the past, the cleaning operation involved a great deal of heavy manual labor in a steamy atmosphere, resulting in a low productivity at a high labor cost. The first step in improving this operation was to derive a method whereby manpower could be replaced by mechanical means, then eliminate as much transportation of the material as possible and finally reduce the amount of time required to process the material. This was accomplished by constructing, between the patenting shop and the ripping mill, a straight line cleaning unit, consisting of a series of tanks containing water, acid, borax and lime solutions with flash bakers to dry cleaned and coated rods and wire.

★ ★ ★

From the patenting furnaces the heat treated rods are moved by ram truck across a platform scale, the net weight of each load recorded, and then directly onto hairpin hooks in the Straight Line Cleaning House. A pair of gantry cranes move the hairpin hooks with their coils of rod through the cleaning and coating cycle. Upon completion of the cycle the pins laden with cleaned and coated coils are deposited on the end of the unit by the gantry crane. Ram trucks remove the coils from the pins and deposit them at the supply end of the various pieces of wire drawing equipment.

Figure 5—Stripping blocks with electric hoist.

★ ★ ★

The installation of modern, high speed equipment has greatly reduced both the labor cost and working area required for wire drawing. Coils of rod are loaded, with the aid of electric hoists, onto pay-off flippers at the supply end of the wire drawing machines and

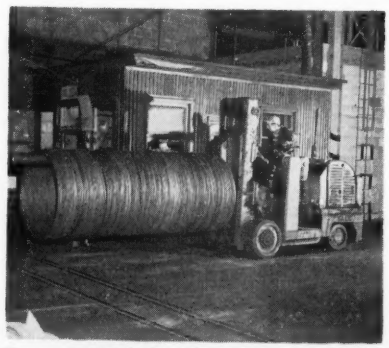

Figure 6—Weighing rods, entrance to Straight Line Cleaning House.

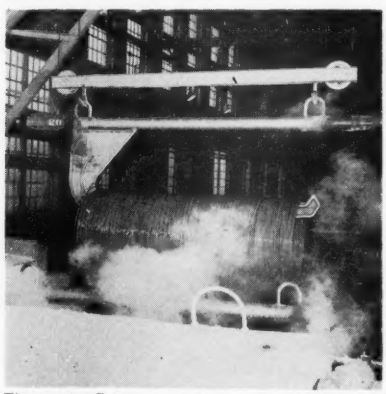

Figure 7—Gantry crane moving hairpin hook with rods through cleaning cycle.

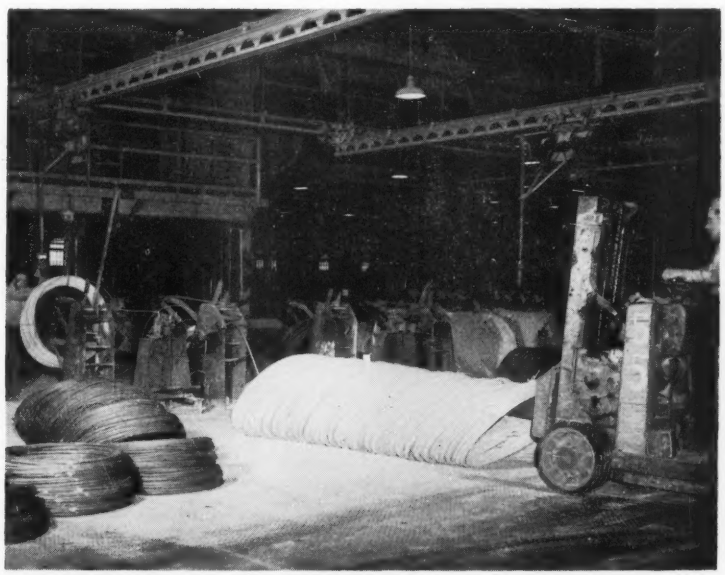

Figure 8—Supply end, wire drawing machines.

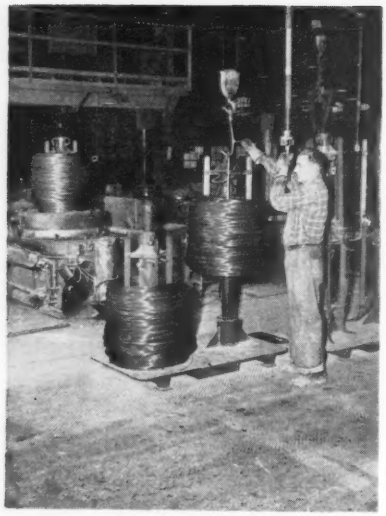

Figure 9—Finish end, wire drawing machines, with 1000# coils on riding strippers. * * *

the 380# coils welded end to end for continuous drawing into 1000# coils of wire. The drawn wire is taken up on the finish blocks and coiled directly onto 1000# capacity riding strippers. As the strippers are filled, they are stripped from the blocks with electric hoists and placed on specially designed pallets, ready to be picked up, weighed and moved to the next process point by fork truck. These pallets carry a 4000# payload and consist of an ordinary pallet base fitted with two vertical pintles which act as guides for the strippers, stacked two on each pintle. This arrangement permits safe, easy handling and requires a minimum of valuable floor space for wire storage.

Figure 12—Stripping blocks, continuous patenting, cleaning and coating. * * * * *

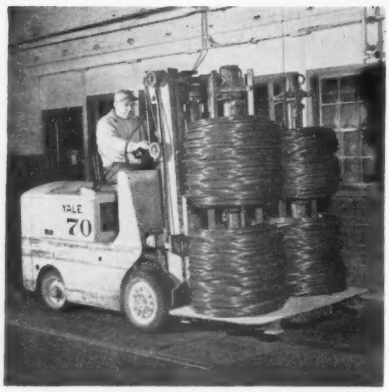

Figure 10—Moving palletized load of 1000# coils.

★ ★ ★

The pallets with 1000# coils of wire are stored within the working area of electric hoists which service the next operation—continuous patenting, cleaning and coating. This rig, located between the ripping mill and the finished wire mill, in conformity with the principle of straight line flow of materials, is a pilot unit for additional similar equipment which will eventually replace the wire patenting furnaces in the Patenting Shop, thereby permitting the expansion of facilities for patenting rods. The rig is equipped with twelve supply swifts capable of paying off 1000# coils and twelve 1000# take-up blocks.

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Electric hoists move the coils, still on their original strippers, directly from storage to the pay-off swifts. The ends of the coils are electrically butt welded and the weld flash filed off for continuous operation. Here the wire is patented, acid cleaned and alkali coated in one operation. Electric hoists are used to strip 1000# coils from the push-up type blocks and to stack the wire, ready to be transported to the finished wire drawing machines by ram truck.

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This innovation has greatly reduced direct labor requirements for patenting and cleaning wire as well as handling and transportation time.

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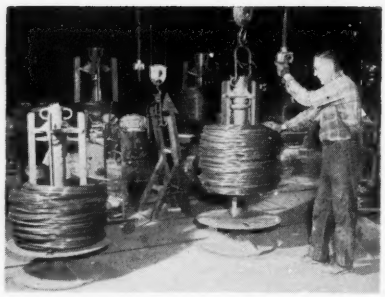

Figure 11—Loading swifts with 1000# coils, continuous patenting, cleaning and coating. * *

At the finished wire drawing machines the 1000# coils of patented, cleaned and coated wire are loaded onto pay-off flippers with the aid of electric hoists and welded, end to end, for continuous drawing into 500# coils of finish size wire. The coils are stripped from blocks on 500# capacity riding strippers and loaded, 8 to a pallet, on 4000# pallets.

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Following the finish drawing operation, fork trucks pick up, weigh, and transport the wire to the mechanized testing and bundling conveyor lines. Here electric hoists place the coils on gravity feed roller conveyors, samples are cut and tested, the coils split into required weights, tagged, banded by automatic strapping machines and placed on pipe skids with electric hoists. This radical departure from old established methods of testing and bundling has brought considerable savings in floor space, manual labor, and time, in addition to increasing the effectiveness of the testing operation.

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The skids are transferred from the conveyors to the shipping floor by fork truck. Wire slated for the

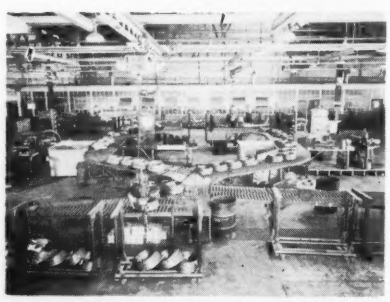

Figure 13—Mechanized testing and bundling conveyor. * * * * * * * *

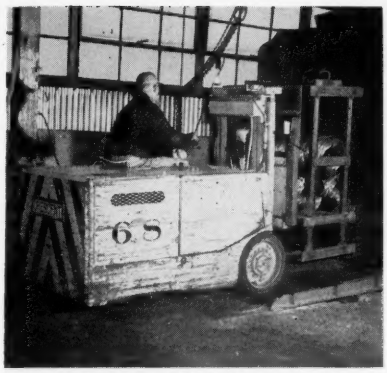

Figure 14—Loading skid of wire into trailer with fork truck.

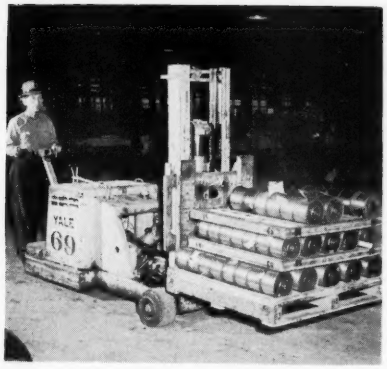

Figure 15—Spools of wire are placed on wood pallets.

Figure 16—Scrap is wound into balls and transported to the Open Hearth Department.

Roebling Rope Shops in Trenton is shipped in company-owned trailer trucks. This operation has been greatly simplified by the use of fork trucks to load the trailers with the wire on pipe skids. The skids are unloaded by fork truck at the Rope Shops and transferred to storage areas where they are unloaded. The empty skids are re-loaded into trailers for the return trip to the Wire Mills.

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Wire which is oiled before shipment to outside customers is loaded onto skids at the conveyors and transferred to the shipping area by fork truck. A bridge crane, equipped with a Heppenstall hook, dips the loaded skids into the oil bath, sets them on a drainage rack, and finally deposits them at a doorway where the coils are unloaded into freight cars.

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Other grades of wire are processed in much the same way as outlined above but are wound on spools. Spools of all sizes are stored in palletized bin boxes in the mills' spool center. Fine sizes of wire are spooled on the wire drawing equipment and placed on wood pallets by the machine operators. The pallet includes separators, so that the complete package consists of two to four layers of spools with a separator between each two layers. After weighing and banding, the unit is ready for shipment, being transported by fork trucks to trailers.

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Wire for hot galvanizing is received in 1000# coils from the continuous wire drawing machines and is handled with hoists at the swifts in much the same way that it is handled at the continuous patenting, cleaning and coating line. Productiometers on the take-up blocks measure required coil weight and electric hoists aid in stripping the blocks.

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The galvanized wire is moved by ram truck to a mechanized testing, weighing and bundling conveyor similar to the testing conveyor mentioned previously. Ram trucks transport the finished coils from the conveyor to the shipping floor and then into box cars or trailer trucks for shipment.

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Scrap in the various divisions is collected into trucks at each manufacturing machine unit, where it is weighed and recorded against the production of that unit. These scrap trucks are assembled into trains and transported by a tow tractor to a single scrap center. This area is covered by a bridge crane fitted with an electro-magnet. As each load of scrap is processed through the scrap balling machine, the scrap balls of such size as can be handled conveniently at our Open Hearth Department are loaded into company gondolas and transported to the scrap yard, where they are transferred onto pan cars.

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The methods outlined here are not necessarily new, but they do illustrate some applications which help reduce handling costs through substitution of machines for manpower, and have reduced the amount of labor and safety hazards which marked old-fashioned methods of material handling in the Wire Mills.

CALENDAR OF COMING EVENTS

***June 12*—PACIFIC COAST REGIONAL MEETING, San Francisco, Cal.**

***Sept. 18*—NON-FERROUS DIVISION MEETING, Waterbury, Conn.**

***Nov. 9 - 12*—THE ANNUAL CONVENTION OF THE WIRE ASSOCIATION, with headquarters at the LaSalle Hotel, Chicago, Ill.**

These meetings will be publicized in Wire and Wire Products and complete programs published well in advance of the meetings. Members of The Wire Association will also be circularized by mail and hotel reservation cards, where needed, will be enclosed.

THE WIRE ASSOCIATION
RICHARD E. BROWN, Executive Secretary

453 MAIN STREET STAMFORD, CONN.

Packaging of Wire and Wire Products

by A. H. Andrews, Special Engineer
Bethlehem Steel Company
Bethlehem, Pennsylvania

This paper, delivered before the Trenton Regional Meeting of The Wire Association on April 16, 1953, in Trenton, New Jersey, treats of a very important subject—the packaging of wire and wire products to prevent rusting and damage.

The author graduated from Rensselaer Polytechnic Institute in 1938 with a degree of B.S. in Mechanical Engineering. He has been with Bethlehem since September, 1938.

The methods and materials used in packaging steel wire and wire products are determined largely by the susceptibility of the product to rust damage. Other considerations are the protection of the product from mechanical damage, the securing of the product into units for easy and economical handling, and the necessity of adequate strength of the container for customer warehousing.

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The packaging methods recommended by the steel industry for all steel products were standardized and published originally by the A.I.S.I., and more recently by the U. S. Dept. of Commerce and the Dept. of Defense in three manuals. The first of these manuals is titled "Packaging, Marking and Loading Methods for Steel Products for Domestic Shipment." The second covers Commercial Export packaging recommendations, and the third covers Military Overseas packaging. These manuals describe all the packaging methods and materials required to effect satisfactory delivery of steel wire and wire products. I propose to describe briefly the development of a few of these packaging methods, emphasizing some of the hazards against which the product must be protected.

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Any carbon steel surface tends to oxidize or rust unless protected from the atmosphere. This tendency is noted especially on unprotected light gauge wire on which the customer does not permit oiling, and on which the drawing compound affords little or no protection. On coarser wires there is often some protection against rust due to the drawing compound remaining on the drawn surface in slight quantities. When the end-use permits oiling before shipment, rusting is prohibited more effectively.

In general, coarse bright basic wire is shipped all-rail in box cars in bare coils, and rust troubles do not occur unless a leak develops in the box car roof, or some other unusual factor is encountered. Figure No. 1 shows one end of a box car loaded with bright wire.

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In making all-rail shipments of certain specialty types of wire various methods of preventing rust damage have been used. Since rust is usually caused by condensation on the product from relatively high humidity atmosphere due to a temperature difference or temperature change, refrigerator cars have been used to prevent the more or less rapid temperature changes. When comparatively cold steel is subjected to a warm atmosphere, condensation on the steel occurs in the same manner as it does on the outside of a glass containing ice water. The refrigerator car permits the wire to warm up while the warming of the air within the car is retarded sufficiently to prevent condensa-

Figure 1.

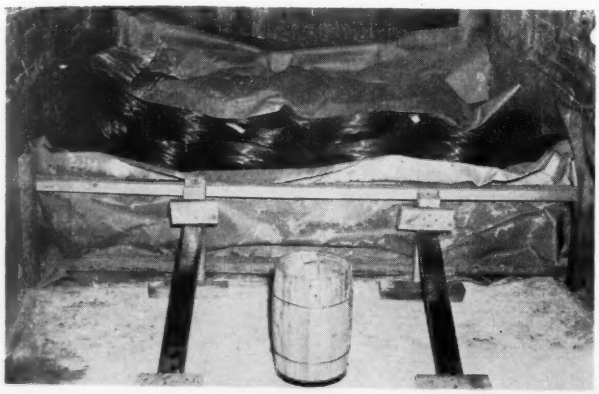

Figure 2.

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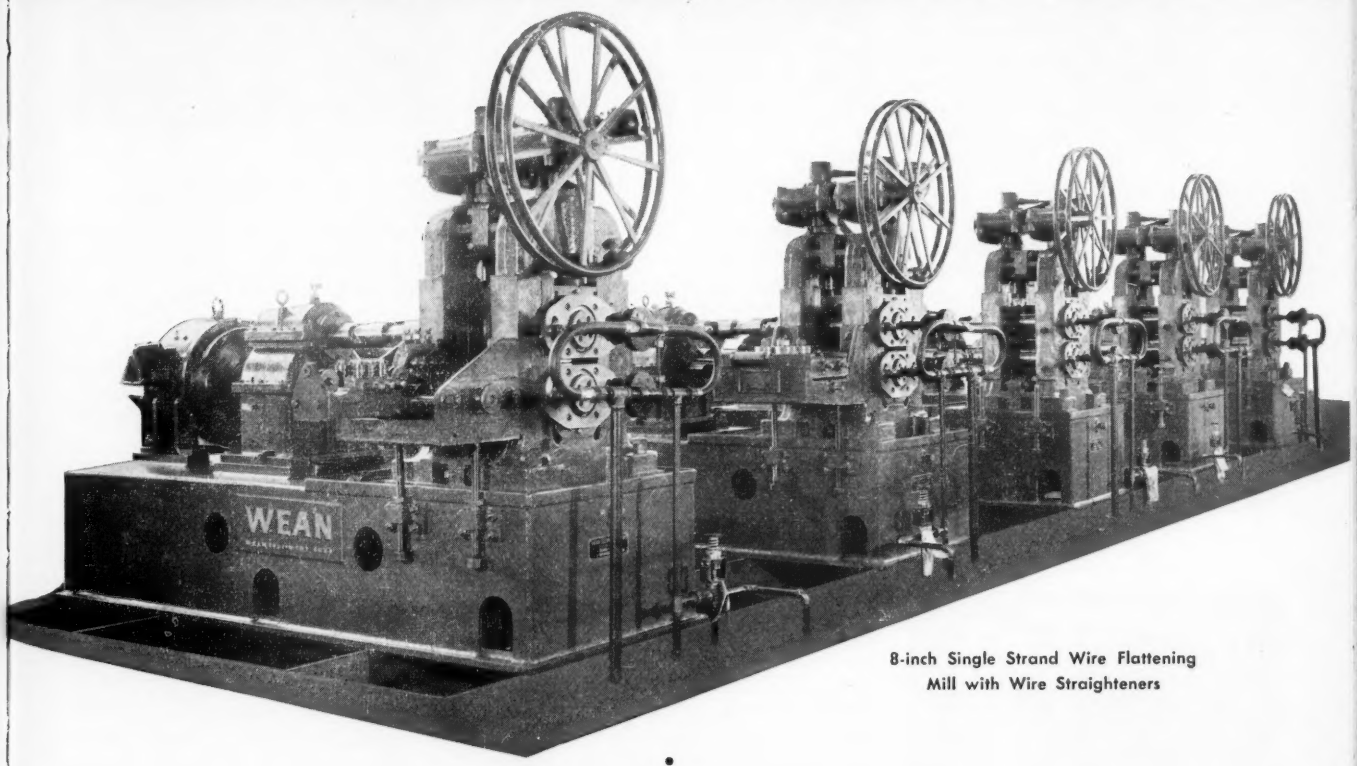

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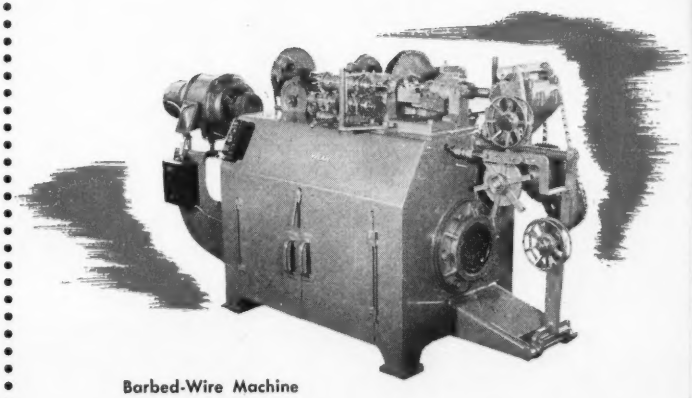
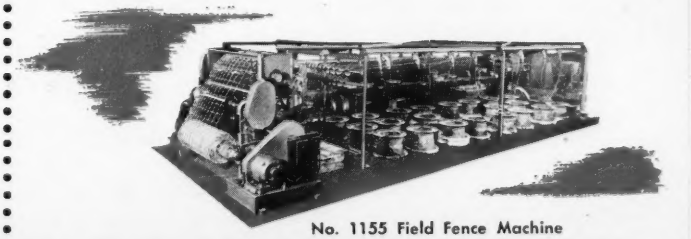


Barbed-Wire Machine



No. 1155 Field Fence Machine

Wean *Equipment Corporation*

tion. However, the use of "reefer" cars for shipping bright wire has not been possible in recent years due to the car shortage.

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Practically all shipments of bright wire by rail today are made in box cars. The shipper's experience with the particular grade of wire, the route of shipment, and the customer's use of the product often dictate some method of protection to prevent mechanical damage and rusting. Figure 2 shows such a method. A coarse paper is often laid on the floor before loading to afford protection against contamination by dirty floors. When shipment hazards are greater, this same type of paper is draped over the completed load to prevent dirt and dust settling on top of the load, and to afford some protection against condensation.

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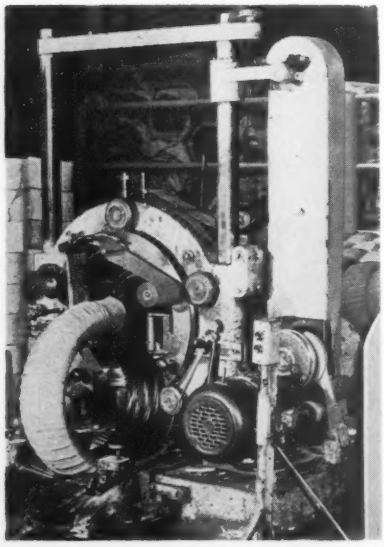

Figure 3.

More positive protection is a spiral paper wrapping on each coil of wire. Figure No. 3 shows such a wrapping being applied on a 400-lb. coil. This paper is usually an asphalt laminated product, about 5″ wide, rather heavily creped to permit a snug wrapping. The asphalt, which is spread between the two layers of paper as a laminant and adhesive, makes the paper more or less waterproof. A 50% overlap of this paper in the spiral wrap results in very good protection on all rail shipments.

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The use of wrapping papers coated with chemicals which inhibit rusting has received considerable publicity in recent years. While it has seldom been necessary to use such papers on all rail or truck shipments, they are being used on some rail-water and export shipments of bright wire. A strip of chemical coated paper about 6″ wide may be applied around the periphery of the coil before the spiral wrap of asphalt paper is applied. The results have been beneficial although not 100% satisfactory due to the difficulty of confining the chemical in a tight wrap.

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It has been found advisable in many cases to use a reinforced laminated paper for the spiral wrap on rail-water shipments in order to minimize the damage to the paper during the numerous handling operations required in such shipments. Glass fibres, sisal fibres or other string materials are laid in the asphalt between the two layers of paper, thus adding considerable tensile strength and resistance to tearing. The benefits of this stronger paper are realized in making a rail-water shipment going by box-car from mill to a port at seaboard, from car to pier, from pier to a lighter, from lighter into the hold of a ship and into stowage position. Reverse movements at destination are often more damaging to packaging due to difficulty in breaking the cargo out of stowage. The handling methods used by longshoremen and stevedores apparently can be improved only by the application of mechanical equipment and devices which make the handling operation simple and easy.

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Added protection against tearing the spiral wrap during handling can be obtained by the use of a spiral wire tie over the paper. Figure No. 4 shows part of a box car loaded with paper wrapped coils tied spirally with wire.

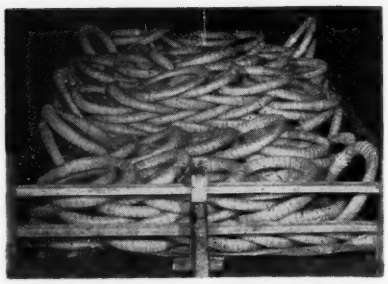

Figure 4.

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While there is seldom any necessity to ship wire in a container which is nearly air tight, such a container has been used. As shown in Figure No. 5, a steel drum with tight fitting, lock type cover was lined with creped water resistant paper, and packed with six 200-lb. coils of a special grade wire. A quarter pound bag of silica gel assured a low relative humidity condition in the drum. Very satisfactory results were obtained shipping wire in these containers, which were furnished by the customers, and returned to the mill for reshipment. The rail-water route included about 18 to 20 days in the hold of a ship where humidity and frequent temperature changes combined to form considerable condensation.

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The matter of securing wire into units for easy handling has received attention in recent years. The size of coils has increased as customers and producers have learned the advantages of handling

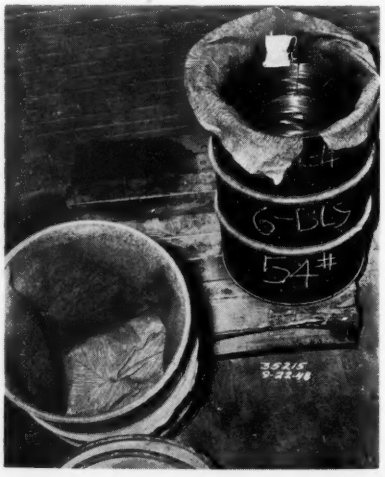

Figure 5.

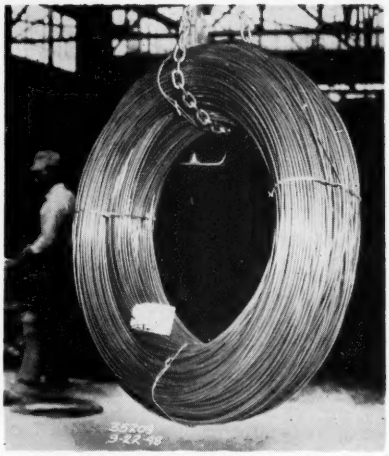

Figure 6.

larger units. While wire ties as shown in Figure No. 6 are still used in most cases and are applied by hand, there are several applications of semi-automatic and automatic banding machines using flat, tension tied, steel bands as ties. The band is a tighter tie which seems to withstand severe handling very well. Figure No. 7 illustrates these band ties. The use of an automatic machine to apply the band, tension and seal it, cut off the band and convey the coil to a pallet, permits an increase in coils tied per manhour of labor.

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We believe this point should be emphasized: The preparation of steel products for shipment consumes a tremendous amount of material and manhours. The best ways of economizing in material and most important, in manpower, and the best way of producing a better package is to apply machines to the various parts of the operation wherever possible.

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While most steel products are of a size that permits shipment without a container as such, steel wire nails do require some kind of container. In times of emergency, we believe nails have been shipped in box cars in bulk, but this method is far from satisfactory. The slack wooden keg has been used for many years as a shipping container for nails. Attempts were made to produce a steel keg which would retain all the advantages of the wooden keg, and eliminate some of the disadvantages. The cost of making a steel container at present does not make it competitive with the wooden container, we believe.

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However, there has been a great increase recently in the use of a box made of corrugated paper board as a shipping container for nails. Several designs are on the market, some of which are entirely satisfactory for all-rail shipment. Figure No. 8 shows an early design of paper board nail box. It has been proven that very severe handling may occasionally batter the container out of shape to the extent that stocking in a warehouse may be difficult, but very seldom is a container broken open. For rail-water shipments there are indications that some improvement may be necessary in the water resistant quality of the corrugated board.

Figure 7.

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Economy of space and compact palletizing are illustrated in Figure No. 9.

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Another application of corrugated paper board containers is found in the packaging of rewound wire products. Wire for automatic hay baling machines is furnished in rewound coils of definite size. The series of containers for this product is in the process of standardization and as shown in Figure No. 10 is an example of attractive packaging of convenient size for customer handling and of adequate strength for proper shipment.

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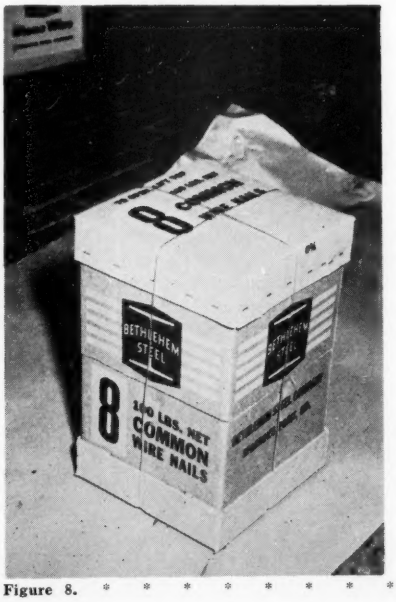

Figure 8.

Figure 9.

Figure 10.

Sizes listed below can also be furnished in STEEL Spools.

STANDARD SIZES

Flange	Traverse	Barrel	Arbor
2½"	3" 3¼"	1¾"	.628"-.633"
3"	3" 3¼" 3½"	1¾" or 2"	.625"-.633"
4¼"	3" 3¼" 3½"	3¼"	.635"
4½"	3" 3¼" 3½"	2½"	.635"
4½"	6"	2½"	.635"
5"	2¾" 3"	3.880"	.531"
6"	3" 3¼" 3½"	3½"	.635"
6"	3" 3¼" 3½"	3½"	3"
6"	6"	3" or 3½"	.635"
6"	6"	3½"	3"
6½"	3" 3¼" 3½"	3½"	.635"
6½"	3" 3¼" 3½"	3½"	3"
6½"	6"	3½"	.635"
6½"	6"	3½"	3"
7"	3" 3¼" 3½"	3½"	.750"
7"	6"	3½"	.750"
8"	3½" 6" 6¼"	4"	3" or 3 33/64"
8¼"	3½" to 7½"	4"	3.630"
10"	6"	5"	Optional
12"	6"	6"	Optional

Do you need special requirements?

We have the engineering experience and tool room facilities to design and make any special spool you may need.

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*Reg. U. S. T. M.

ACROMETAL PRODUCTS INC.

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The Trenton Regional Meeting

by Edmund D. Sickels, Editor
Wire and Wire Products
Stamford, Connecticut

So many people turned out for this fine Regional Meeting, held on April 16th and 17th at the Stacy-Trent Hotel in Trenton, New Jersey, that there was considerable difficulty in caring for all the guests. Over three hundred attended.

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Some seventy-five were placed in an adjoining hotel and approximately fifty were forced to put up overnight in Princeton, ten miles out. In spite of such inconvenience, the meeting was an outstanding success from the standpoint of the program and the spirit of good fellowship.

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As many had arrived on Wednesday, the registration desk was a busy place at 8 o'clock of the opening day. By evening 271 people had registered, this many attending the banquet.

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In the morning, at 10:30 A.M., the Executive Committee of the Wire Association met to consider a number of routine questions on coming meetings. Curtis Voigtlander, who had tendered his resignation as a Director coincident with his retirement from active business, at the request of the Committee, agreed to remain as a Director until the expiration of his term of office.

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Following this meeting the Directors present entertained the program committee members and the speakers at a luncheon.

Technical Session

Directly following lunch, the session opened with H. F. Jacobsen, Director of Packaging and Loading, American Steel and Wire Division, United States Steel Corporation, Cleveland, Ohio, acting as chairman of the meeting. In his opening address, Mr. Jacobsen said:

"I appreciate the honor of being asked to act as Chairman of today's Technical Session of the Wire Association here in Trenton. In particular as our subject deals with packaging and material handling, a field in which I have been active for many years.

"Material Handling itself, as you all know, is nothing new. Since the World has existed, man has had to move things —TO PICK UP AND TO SET DOWN. The Egyptians when building the pyramids faced a tremendous problem of handling. However, at that time, labor was cheap; but even then some means of mechanical handling were employed. But, times have changed. We are now living in the machine age and the electronic age. Cheap labor has disappeared. American labor is geared to mass production and this production has to move. The automobile industry and others have solved their problem of moving the finished product through installation of conveyors and other mechanical equipment. The steel industry is handling raw materials—ore, coke, coal, etc., by means of huge shovel cranes and other auxiliary equipment. An ore boat containing approximately 20,000 tons is being unloaded in about three hours. But when it comes to moving the finished steel and wire products away from the producing equipment into warehouses, cars and trucks, the progress of streamlining our packaging, bundling, and handling operations has been rather slow.

"Management is well aware of this fact and realizes that material handling is one of the largest single labor costs in industry. General studies indicate that on an average about 60 tons of material are handled for each ton produced. The field of Material Handling is wide open and is one of the last sources left offering tremendous possibilities for cost reduction.

"Today's session therefore should be of great interest to all of us as we will hear from representatives of two companies about what they have done to improve and streamline packaging and material handling operations in their respective plants."

★ ★ ★

A. H. Andrews, Special Engineer, Bethlehem Steel Company, Bethlehem, Pa., delivered the first paper: "Packaging of Wire and Wire Products." He was followed by John Maisch, Wire Mill Foreman, John A. Roebling's Sons Corporation, Roebling, N. J., who presented a paper entitled: "Mechanical Handling at the Wire Mills of John A. Roebling's Sons Corporation."

★ ★ ★

Both papers were of interest to ferrous and non-ferrous men and were very well received, with active question and answer periods following each. These papers are reproduced elsewhere in this issue.

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At six o'clock a large room was crowded to capacity during a delightfully convivial cocktail hour. An orchestra supplied a background of music during the affair.

The Banquet

Promptly at seven P.M. members and guests repaired to the banquet hall for dinner. The banquet opened with the singing of the Star Spangled Banner, which was followed by a dinner, the menu for which was exceptional, both as to quantity and quality.

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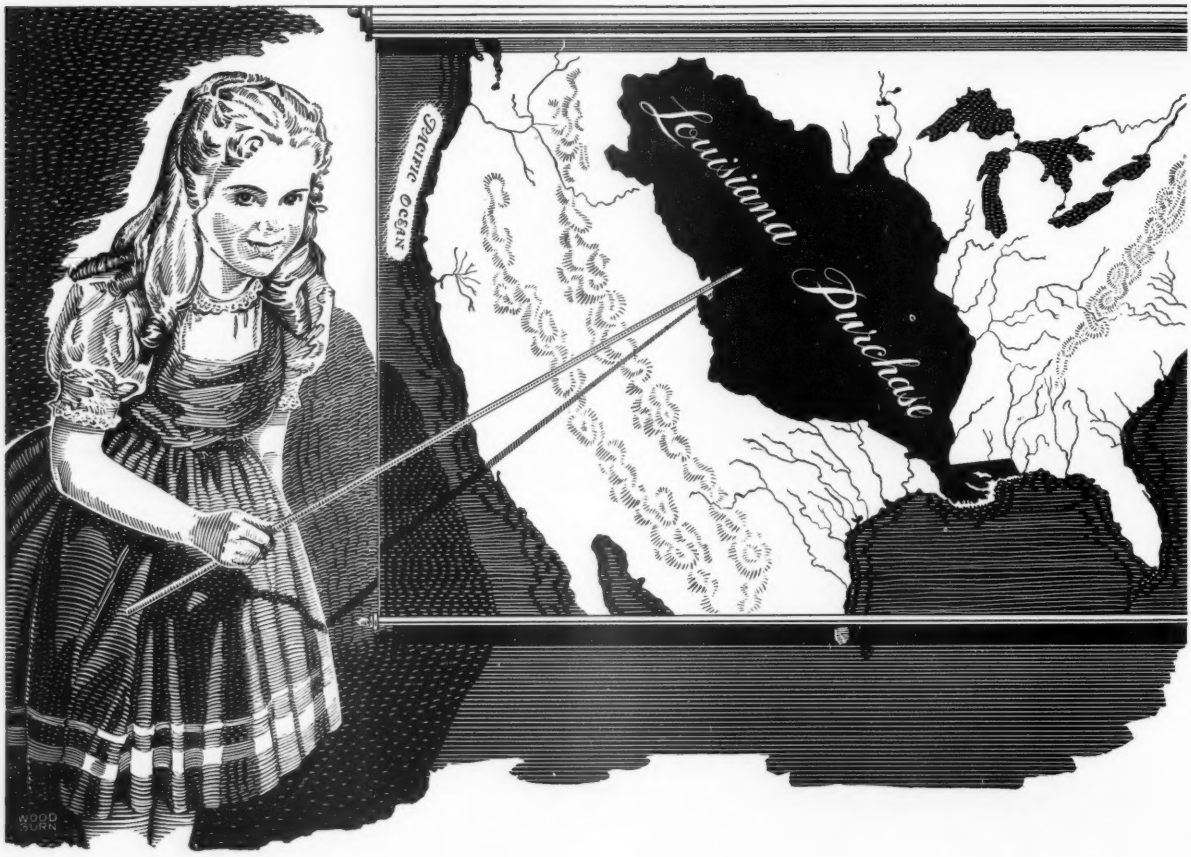
With L. D. (Jack) Seymour serving as master of ceremonies, following the dinner, he expressed his pleasure at having so large and enthusiastic a gathering there, paying special tribute to the many lovely ladies who had come to spend two days in Trenton with their men-folk. Following Jack, Leonard C. Crewe, Jr. ("Red" to his friends) President of the Association, made an informal-formal

(*Please turn to page* 624)



The New Louisiana Purchase

EVERY day America crosses a frontier—the frontier of a new market. It is the market created by an ever growing population. Since Pearl Harbor, our population has increased 23½ millions—more than all the people now living in the region west of the Mississippi once called the Louisiana purchase, that vast billion-acre area which provided us with geographical frontiers for a hundred years.

During 1952, 8,500 babies were born daily, increasing our population by nearly 3,000,000 people. New families and bigger families need more and bigger houses, more food, clothing, cars, roads, hospitals, churches, schools. Their needs call for continuing and increasing production from farms and factories.

There are those among us who say a decline in government spending will bring depression. But where is there room for depression when we add the population of another Minnesota or an Iowa to our nation each year—when the need for goods and services increases steadily? In fact, only by tapering off our vast programs of government spending can industry and business hope to provide sufficient goods to maintain our present standard of living and satisfy the demands of our ever growing population.

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Fabrication of Silver Wire

by Fred M. Carter, Metallurgist
Baker and Company, Inc.
Newark, N. J.

The accompanying article has been written to give a general description of the working methods used in industry for the preparation of fine silver wire of all sizes down to the finest. It was written without a previous knowledge of the excellent article on "Silver Wire—Its Cold Working and Annealing" by Professor Baliki in the December, 1952, number of Wire and Wire Products.

The Baliki article contains much information of value to men engaged in preparing for the commercial production of wire, and Mr. Carter readily grants that this is so. In particular, the clarity of the space diagrams will be appreciated by the production engineer. Where divergencies between experiment and practice are observed, one must note two points: one, the silver used in the experiments is of highest purity, as compared with the 99.9% commercial "fine silver," and two, the quantities handled are not at all comparable. These two factors readily account for the higher temperatures and longer times of annealing used in practice than those mentioned in the experimental procedure.

Silver is one of the so-called precious or noble metals, the others being gold and the six metals of the platinum group, platinum, palladium, iridium, rhodium, osmium, and ruthenium. They are classed as noble metals because of their resistance to acids and to oxidation at atmospheric and elevated temperatures. They are all high melting metals, the melting point ranging from 961°C (1762°F) for silver to 2700°C (4900°F) for osmium. The nobility of the whole group is least pronounced in the case of silver since this metal dissolves rather readily in nitric acid and, as is well known, rapidly tarnishes in a sulfur atmosphere. It can however be heated in air to any temperature without oxidation, and so may rightly claim membership in this group of metals.

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Silver is one of the metals of antiquity and from early days has been widely used for ornamentation and coinage. Its brilliant whiteness makes it desirable for jewelry, tableware and all forms of ornaments. Millions of ounces go regularly into the photographic field; the chemical industry absorbs much of the metal for lining vessels, especially in the food industry, and for catalytic purposes. Brazing alloys, or the so-called 'hard' solders, contain various proportions of silver. Electrical contacts of silver are essential in innumerable automatic controls of electric circuits. The extremely wide use of electro-deposited silver is known to everyone.

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The physical properties of silver are such that the metal is readily adapted to fabricating in all shapes and forms. It is quite soft, having a Brinell or Vickers hardness of about 30 in the annealed state and about 90 when work hardened. Its tensile strength is 45,000 to 50,000 psi in the hard drawn condition; when fully annealed, this drops to 20,000 to 25,000 psi. The elongation is 2-4% for the hard wire and 50-60% for the annealed wire. The pure metal recrystallizes at 100°C (232°F) or even less, though the temperature used for annealing commercially is generally about 600°C (1112°F). Silver has one of the highest ductilities of all metals, and exceeds all in its electrical conductivity. The excellent reflectivity in the visible range accounts for its use for mirrors and decorative articles in general.

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Due to its excellent ductility there is no difficulty in drawing silver into wire form of any diameter down to the smallest sizes. There is no criticality in the per cent reduction per die, and, owing to its non-oxidizability, the occasional annealing treatment presents no difficulties. Since it is a precious metal, the starting ingots are not as large as in the case of copper or other base metals, nor in general is the speed of drawing as high. However, the machines used are not dissimilar from those used in a plant for reducing base metals to wire.

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The melting of fine silver is a simple operation and may be carried out in a gas or high-frequency induction furnace. In the former, silver bricks, each weighing about 1000 ozs., are charged into a clay graphite crucible to a total of several thousands of ounces and heated in a city-gas air furnace; charcoal and boric acid cover the metal and a protective atmosphere of city gas is used. The furnace is tilted and about 800 ozs. is poured, still with city gas protection, into an intermediate crucible. Here a lump of wood may be added as a reducing agent and the silver poured into iron moulds giving ingots of, say, 15″ high x 1⅞″ diameter, each weighing approximately 200 ozs. For the induction furnace, it is preferable to use granular electrolytic silver ("needle silver"); a modified clay-graphite crucible of about 400 ounces capacity is used. It is necessary to have a crucible that has better electrical conductivity than the regular clay-graphite crucible in order to get good results. A "Tercod" type crucible has been found to be very satisfactory. When molten, the silver is poured into two iron moulds, each producing an ingot measuring 12″ to 15″ high x 1″ to 1½″ square and weighing about 200 ounces.

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The following is a typical sequence of operations for the drawing of silver to fine wire, although many variations are permissible. We may take as an example, an ingot produced from the induction

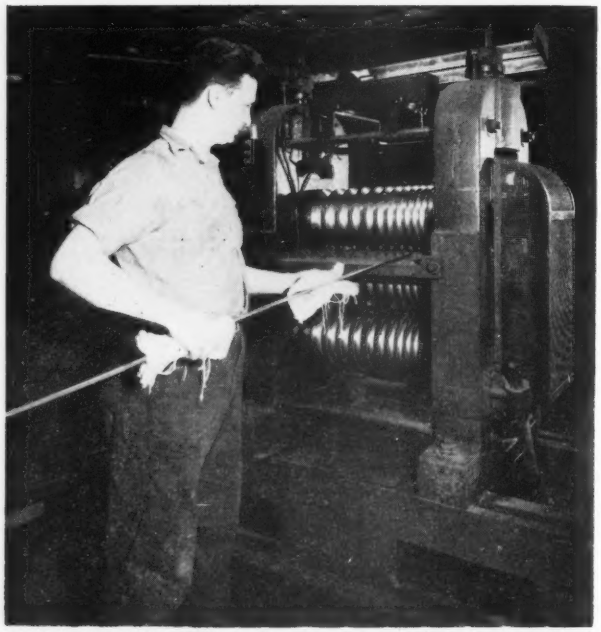

Figure 1—Hot Rolling Mill.

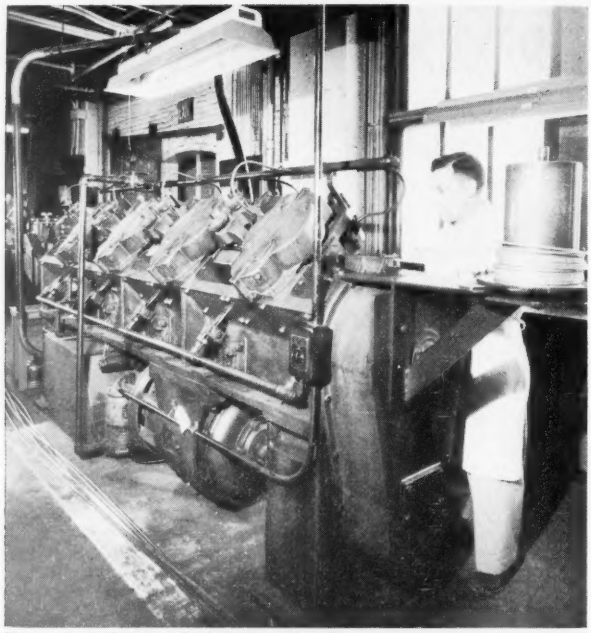

Figure 2—A Tandem Cold Rolling Mill.

furnace as the starting material.

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Since the mould is iron with a smooth carbonized or oiled surface, little or no preparation of the ingot surface before rolling is required. The ingot is heated to about 650°C (1202°F) and rolled hot in a heavy rolling mill to about ½″ square. It is then reduced cold in a tandem mill to about .100″ square. A tandem mill consists of a series of rolls, perhaps eight in number; three grooves are cut in each roll and are of such dimensions that the material being rolled is suitably reduced in size as it passes through a groove in each succeeding roll. For ductile material like silver the passage through the series of first grooves in the rolls of the mill reduces the size from about ½″ square to ¼″ square; the second passage, from ¼″ square to .170″ square, and the third to about .100″ square.

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It is not absolutely necessary to resort to hot rolling a silver ingot; it may be cold rolled to ½″ square and then given one pass through the tandem mill to reduce it to ¼″ square. If only cold rolling has been used, it is advisable to give it an annealing treatment at this size. A half hour treatment at about 600°C (1112°F) is sufficient. Two more passes through the tandem mill bring it, as before, to about .100″ square.

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The drawing is commenced in a heavy break-down machine provided with eight carbide dies; a water-soluble drawing compound is generally used. The first die serves to round up the wire and the remainder of the first set up reduces the wire from .100″ to .060″ diameter; no annealing at this point is necessary and the drawing is continued in a second set-up of eight dies, which delivers

Figure 3—Heavy Wire Drawing Machines.

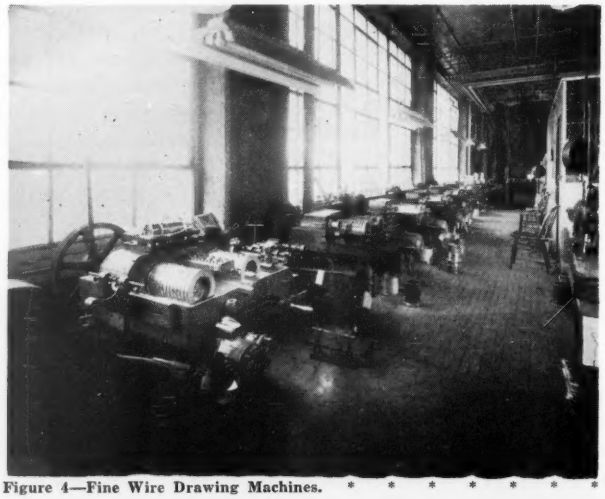

Figure 4—Fine Wire Drawing Machines.

the wire at .025″ diameter. It is now usual to anneal the wire by heating the coil in a furnace with an air atmosphere at 600°C (1112°F) for about half an hour. Heating at a higher temperature or for a longer time should be avoided, since such treatment causes excessive crystal growth.

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Further drawing is done in a fine wire machine equipped with multiple diamond dies; the same lubricant is used. To draw .025″ wire to .001″ requires quite a number of set-ups of the machine, and in each set-up from 8 to 12 diamond dies are used. A typical schedule is:

First set-up
reduces the wire from .025″ to .010″
Second set-up
reduces the wire from .010″ to .005″
Third set-up
reduces the wire from .005″ to .004″
Fourth set-up
reduces the wire from .004″ to .003″
Fifth set-up
reduces the wire from .003″ to .0022″
The wire is now strand annealed at about 600°C (1112°F) and the drawing continued:
Sixth set-up
reduces the wire from .0022″ to .0016″
Seventh set-up
reduces the wire from .0016″ to .001″

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It should be mentioned that much silver rod is produced by extrusion; a silver ingot of suitable size is heated to a temperature not far below the melting point and transferred to a horizontal extrusion machine; by means of a multiple die plate, several rods of about .250″ are simultaneously extruded. Further reduction in diameter is carried on as outlined above.

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Several of the alloys of silver are used to an even greater extent than the pure metal, for example, coin silver which is 90 silver 10 copper, sterling silver which is 92.5 silver 7.5 copper and the numerous silver solders which are silver-copper-zinc alloys, often with additions of cadmium or tin. In melting these alloys, the same large tilting furnace is used as with fine silver and a similar intermediate crucible for ease of pouring into the moulds is advisable. Greater care must be taken to avoid oxidation of the base constituent metals; the same protection by means of fluxes and city gas must be used and in addition, a small amount of a reducing agent is sometimes introduced. The same ingot moulds are used. Wire drawings of these alloys necessitates certain changes in procedure from that used for fine silver. These changes are those that are logically expected in dealing with a material which is less ductile than fine silver and which requires an atmosphere for annealing that will protect the alloy from oxidation of its base metal constituents. The ductility and hardness of these various alloys differ from each other, entailing modifications in the rolling and heat-treatment procedure. The schedule for coin silver wire production may be taken as typical, although some of the silver solders are so lacking in ductility that they require somewhat special care in drawing and heat treatment.

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Hot rolling is adopted to reduce to ½″ square, from which size it is cold rolled in a tandem mill to ¼″ square. At this size it is annealed in controlled atmosphere furnace. The atmosphere is a nitrogen-hydrogen mixture which is readily obtainable in cylinders or may be produced by an apparatus like a Nitroneal Generator. The furnace is heated to 700°C (1292°F) and the coin silver is kept therein for about half an hour. It is then removed and quickly quenched.

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One pass through the tandem mill reduces it .170″ square and a second pass to .100″ square. It is then swaged round and cold drawn to .085″ dia. At this size it is annealed as before, then drawn to .025″. It is now annealed in the same furnace, but at 650°C (1202°F) for 20 minutes, and quenched. As with fine silver, further drawing is done in a fine wire machine, using diamond dies. The schedule may be:

First set-up
reduces the wire from .025″ to .010″
It is now annealed in the same furnace for 20 minutes at 600°C (1112°F) and quenched. It is usual to pickle in dilute sulfuric acid at this stage to remove any possible discoloration.
Second set-up
reduces the wire from .010″ to .005″
At this size it is strand annealed at about 600°C (1112°F)
Third set-up
reduces the wire from .005″ to .004″
Fourth set-up
reduces the wire from .004″ to .003″
Fifth set-up
reduces the wire from .003″ to .0022″
Again it is strand annealed as before.
Sixth set-up
reduces the wire from .0022″ to .0016″
Seventh set-up
reduces the wire from .0016″ to .001″

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As with other wires, silver work hardens during the cold drawing process; its tensile strength increases and its ductility decreases. Some of the uses to which silver wire is put requires that these properties are carefully controlled, and, as is generally done with metal alloys, this is done by annealing the wire at some specified size above the finished size. For example, silver mesh is widely used in the chemical field, particularly as a catalyst; in order to make satisfactory mesh, it is necessary to have the wire of such strength and ductility that the crimp of the warp and woof wires is equal. This is controlled by paying attention to the amount of cold work done after the annealing treatment.

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In order to reduce the cost somewhat, silver wire is often replaced by silver-clad base metal wire; however, since the silver is only a thin cladding, the drawing procedure is controlled by the nature of the base metal core rather than by that of the silver coating. With Wollaston wire the reverse is true; this is a composite wire with heavy silver jacket over a fine core of platinum or other metal. For its manufacture, a heavy tube of silver is slipped over a core of platinum wire and the whole reduced in the normal fine silver manner. The outside diameter may be 10 to 100 times the core diameter, so that when the composite wire is drawn to fine size and the jacket removed by acid, an exceedingly fine core of platinum is obtained. Platinum wire .00004″ diameter or

(*Please turn to page* 630)

Galvanic Removal of Scale, Burrs, Rust and Surface Polishing, and Galvanic Acid Galvanizing

by Richard Beck

This article, which appeared in the November, 1952, issue of Draht, has been translated and briefed for us by Jerome W. Howe, Dean of Admissions and of Students, Worcester Polytechnic Institute.

In it the author describes a process of scale removal that is not only less costly than the conventional pickling procedure, but involves no liability to acid embrittlement in the rod or wire.

The new patented Dynamisator-alternating-current process for cleaning wire frees the wire from every trace of scale and rust in the shortest time (45 to 180 seconds) without attacking the surface of the metal, as, for example, injuring it through hydrogen diffusion. The process is based upon purely electrolytic procedures, and is articulated into three immediately successive steps (see diagram). Every previous unobjectionable process required a uniform clean surface susceptible to attack. Chemical as well as electrolytic procedures presuppose this condition. Moreover, formerly used processes employing chemicals resulted in a diffusion of hydrogen on the surface of the metal. And hydrogen diffusion is still greater by use of the electrolytic cathodic process.

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By the Dynamisator-alternating-current process the first step provides cathodic and/or anodic alkaline degreasing, so that a hydrogen-free surface is assured. However, a hydrogen-free surface reacts quite differently from a hydrogen-laden one; not only for the chemical, but still more for the electrolytic attack, conditions must be created to assure the desired result.

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In the second step of the proper alternating-current treatment a modulated alternating current dissolves every scale and rust particle. This current is generated by a contact transformer according to the scale and rust condition. The enormous speed with which every trace of scale or rust is dissolved is the result of the management of the current. The electrolyte used is composed on a sulphuric acid basis.

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The third step is the so-called caustic bath (formed on a hydrochloric acid basis). Action is produced by an anodic direct current and serves only for the removal of the scale and rust dissolved in the previous bath. If one intensifies this third and last caustic process one can at the same time achieve a surface polish and/or effect disappearance of burrs. Use is made of the fact that the electric anodic direct current attacks the outermost projecting parts of the wire (burrs and edges). But here also—it is a matter on the whole of an exceptional electrolytic process—it depends particularly upon the correct determination of the voltage and current strength.

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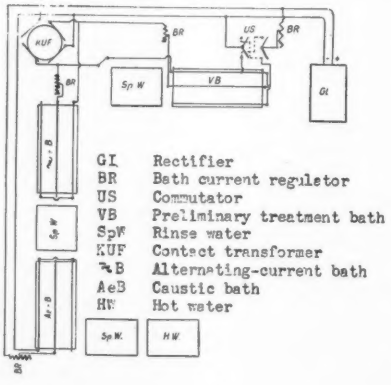

GI	Rectifier
BR	Bath current regulator
US	Commutator
VB	Preliminary treatment bath
SpW	Rinse water
KUF	Contact transformer
~B	Alternating-current bath
AeB	Caustic bath
HW	Hot water

T h e Dynamisator-alternating-current process:

(See diagram below)

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It is seen from the diagram that the Dynamisator-alternating-current process adapts itself to all possibilities of variation. Accordingly, one can clean and clear from rust and burrs and polish all metals in such an installation, common iron as well and quickly as the highest-grade non-rusting steel or NE metals, including the light metals. It should be especially pointed out that in every case a surface results so clean and free from hydrogen that it is ready without the least imperfection for every kind of subsequent working. It would be beyond the scope of this paper to deal with every species of metal and every conceivable product. However, here briefly, are a few data respecting the cleaning of wire and wire rod:

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In 1952 penetrating researches were carried out with the fully automatic cleaning by the Dynamisator-alternating-current process. The first installation of this kind for this purpose had the following dimensions:

Bath I Preliminary cleaning
65.6′ x 10.0′ x 13.1′
Bath II Alternating-current bath
98.5′ x 10.0′ x 13.1′
Bath III Caustic bath
98.5′ x 10.0′ x 13.1′

The unreeling mechanism permitted (unfortunately) only a velocity through the baths of 50 feet per minute. Ordinary wire rod 0.236 inches diam. out of current production was used. The maximum power demand, including the applied low-tension direct current, amounted to about 5 KW. hours. The wire ran from the usual

unreeling apparatus over the so-called contact rolls through the three baths, with momentary rinsings, onto the reeling frames. The wire rod, clean (silver-white), was further spooled to coils of the usual size and weight (175 to 200 lbs.). In the subsequent wire-drawing this wire showed itself free from imperfection even without use of lubricant.

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The cost per ton of wire (of this cleaning) is reduced by about 60%. Also one should not undervaluate the favorable reduction in space. Electrolytes are not used up so rapidly as the pure chemical pickles. They do not fume so much, and can be cleaned and regenerated by the use of filter pumps during the process. The maximum speed of the process was not determined by these research results, but at least 65 feet per minute can be expected with baths of the given dimensions.

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The Dynamisator galvanizing process works on an acid principle. The electrolyte is entirely free from foreign material; no hydrogen is formed during the process; the use of material is economical; and the ductile, firmly adhering, finely crystalline coating insures perfect surface protection. The process is carried out at ordinary room temperature. The attendance is limited to the occasional control of the pH value and the bath density. Wire galvanized by this process at a velocity of 10 feet per minute will acquire in 7 or 8 minutes a zinc deposit of .0064 oz. per sq. in., without danger of any fault. Wire that has been first cleaned by the Dynamisator - alternating - current process can, immediately following, be galvanized by fully automatic procedure, or of course hot-dipped instead. Experience is needed to ascertain how much advantage the Dynamisator galvanizing process has over the hot-dipped process.

★ ★ ★

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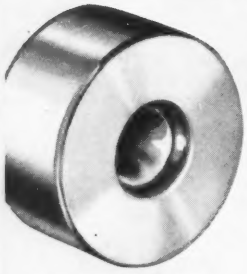
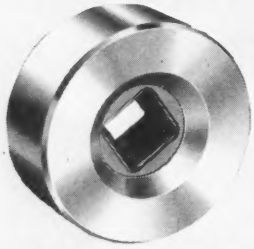
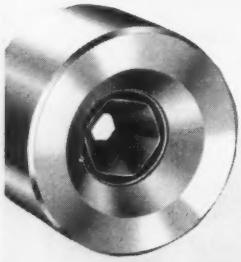


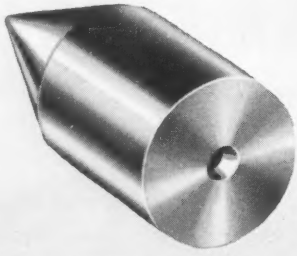
ROUND-HOLE DIES



SQUARE-SHAPE DIES



HEX-SHAPE DIES



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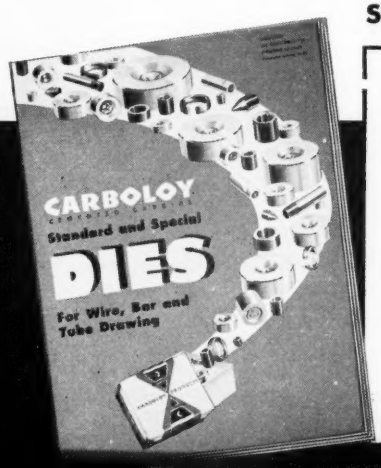

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Small Rolling Mills Designed With Heavy Machine Features

The rolling mills described here are of special interest to manufacturers of jewelry, slide fasteners, small machine parts and other applications where close tolerances are an objective.

A new concept in design of small rolling mills—with ruggedness and versatility the main objectives—is embodied in a new line of three and four inch rolling mills developed by the Stanat Manufacturing Company of Long Island City, New York. For the first time, mills of such dimensions now incorporate many features formerly associated only with the heaviest type of equipment.

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Through the use of standard, interchangeable parts, units can be "tailored' to meet individual requirements, without resorting to complete redesign. Rolls are furnished either flat or grooved to produce a great variety of shapes such as round, square, half-round, diamond, or special shapes for individual requirements. Rolls are also supplied for such purposes as reducing or compacting small tubing sizes. A typical grooved roll in the three inch diameter machine might produce square wire in sizes from 0.250 in. down to 0.040 in., although this is by no means the practical limit. In the 4 in. diameter machine, this range of sizes can be materially increased. By mounting two 4 in. machines side by side on a single base, wire can be rolled from 0.750 in. down to 0.040 in., but reduction ranges can be varied to suit individual needs.

Greater versatility is achieved by mounting standard units in various combinations. Typical groupings are: Two sets of flat rolls, one for roughing, one for finishing; one set of flat rolls and one set of wire rolls; two sets of wire rolls to greatly increase the range of the machine; two sets of flat rolls, one for hot rolling and one for cold rolling. These mills can also be furnished with a built-in bull-block to draw wire, or to provide tension during rolling.

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The rugged construction of these compact machines is characteristic of "heavy" equipment design. These features include housings cast of Mechanite type GM alloy to withstand extreme stresses and

(*Please turn to page* 629)

Figure 1—Operator rolling flat stock on combination flat and wire rolling mill. Although this machine is equipped with single hand wheel screw-downs, a wide variety of possible assemblies enables a single machine to do the work of three or four.

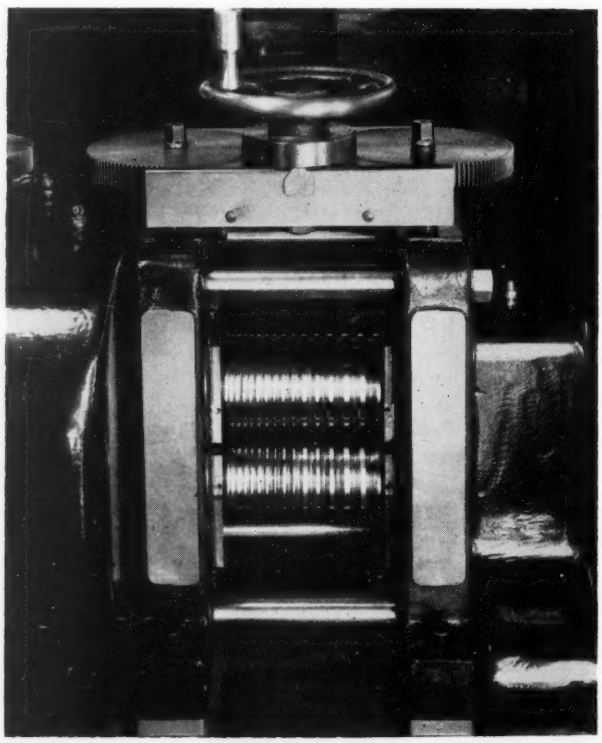

Figure 2—Close-up of wire rolling head with guards removed to show grooved rolls. This machine shapes or reduces wire. Another popular use is to compact tubular heating units.

Government Wire Production Information

Welding Rod Coating Research Project

Arrangements have been completed for a research project to determine the feasibility of using domestic brookite in the production of welding rod coating and titanium metal, Howard I. Young, Deputy Administrator of the Defense Materials Procurement Agency, announced recently.

★ ★ ★

The brookite ores to be used in the studies also are known to contain significant quantities of the alloying materials, columbium and tantalum, and the project will include research on how to recover these materials.

★ ★ ★

At present, about 70 per cent of the welding rod coating and about half of the titanium metal produced in the United States is made with rutile.

High-grade rutile ores, however, are not plentiful in this country. The United States currently uses rutile at the rate of 25,000 tons a year, but only 7,500 tons are domestically produced, Australia being the principal foreign supplier. Most of the country's requirements for columbium and tantalum also are met from foreign sources.

★ ★ ★

Like rutile, brookite is a natural dioxide of titanium. While the two materials differ in crystal structure, their theoretical composition is identical, and it is believed that they can be used interchangeably, provided the brookite can be economically concentrated and purified.

★ ★ ★

The project will be carried out under a contract between DMPA and the National Lead Company, of New York, one of the leading producers of both titanium metal and welding rod coating. The ore to be used in the tests will come from a deposit near the town of Magnet, Hot Springs County, Arkansas.

★ ★ ★

The company will mine approximately 50 tons of ore from different parts of the deposit, crush it at the site and ship it to Golden, Colorado, where it will be concentrated. The ore is expected to yield from 2,500 to 3,000 pounds of high-quality brookite concentrates.

★ ★ ★

Approximately 1,000 pounds of the concentrates will be shipped to the company's plant at Niagara Falls, N. Y., where it will be ground into welding rod coating for testing by two different welding rod manufacturers, and 1,000 pounds will be forwarded to the company's laboratories at Sayreville, New

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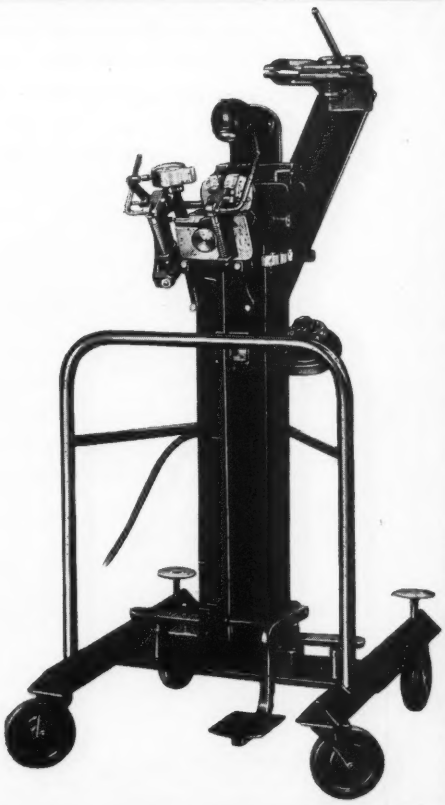
Standard equipment with these units include annealing dies, filing vise, light extension cord, and mounting on a 4-wheel truck. Special units can be furnished for crane mounting.



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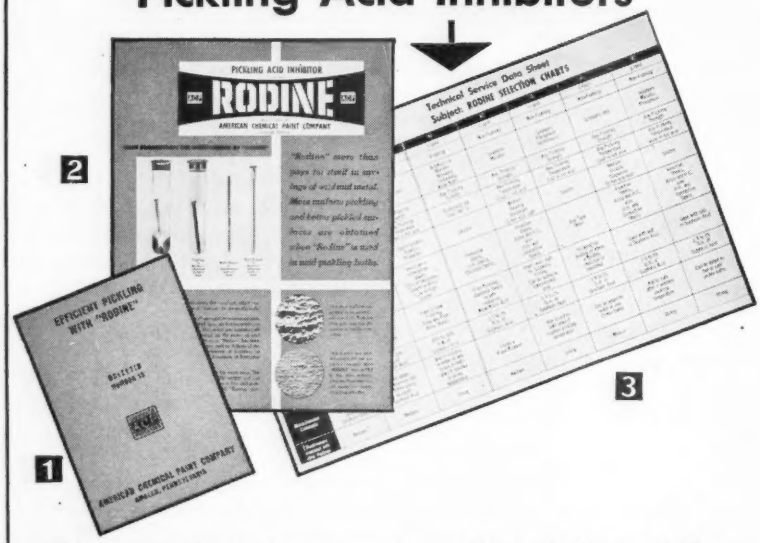

1 The standard reference work on pickling, "Efficient Pickling With RODINE" — Bulletin Number 13 — is now available in a new, revised edition.

2 This new 4-page general descriptive folder presents essential information on "Rodine" pickling acid inhibitors.

3 The recently revised "RODINE SELECTION CHART" gives characteristics of and uses for typical "Rodines" used with sulfuric and muriatic acids. Technical Service Data Sheet No. 13-1-1-4.

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Jersey, where it will be used in a test production of titanium tetrachloride, the material used in making titanium metal.

★ ★ ★

Approximately 500 pounds of concentrates will be turned over to the Bureau of Mines, Department of the Interior, for use in research by the Bureau's laboratories at Rolla, Missouri. The Bureau already has conducted extensive laboratory tests with brookite.

★ ★ ★

DMPA has agreed to reimburse the company for up to $20,000 of its direct out-of-pocket expenses incurred in the project.

Magnesium Output Cut

Five of the Government's six magnesium plants will be taken out of production, it has been announced by the General Services Administration. The cutback is being made as the result of a review by the Munitions Board of current and future requirements.

★ ★ ★

The six plants were reactivated in 1951 to meet critical stockpiling and other defense needs for magnesium and have now partially "worked themselves out of a job." They were built during World War II. After fulfilling their original purpose, they were held as part of the National Industrial Reserve, which is under the custody of the Public Buildings Service.

★ ★ ★

In terms of rated capacity, the cutback announced recently will reduce overall Government output from approximately 196,000,000 pounds a year to approximately 80,000,000 pounds, the rated capacity of the one Government-owned plant to remain in production. This will augment private capacity of approximately 56,000,000 pounds a year.

★ ★ ★

Locations of the five plants to be shut down and the firms operating them for the Government are:

Painesville, Ohio—Diamond Magnesium Corporation, a subsidiary of the Dia-

mond Alkali Company, Cleveland, Ohio.

Canaan, Connecticut, and Wingdale, New York—both Nelco Metals, Inc., a subsidiary of the New England Lime Company, Adams, Massachusetts.

Manteca, California—Kaiser Magnesium Company, a subsidiary of Kaiser Aluminum and Chemical Corporation, Oakland, California.

Spokane, Washington—Pacific Northwest Alloys, Inc., of Spokane, a subsidiary of Chromium Mining & Smelting Corporation, Chicago, Illinois.

★ ★ ★

The sixth and largest of the Government-owned plants is at Velasco, Texas, operated by the Dow Chemical Company of Midland, Michigan. This plant, which produces magnesium from seawater, will be kept in operation.

★ ★ ★

Commissioner W. E. Reynolds said that keeping the Velasco plant in operation and shutting down the other five, which have a combined rated capacity of approximately 116,000,000 pounds a year, was the "most practical and economical" way of meeting remaining requirements for magnesium and at the same time bringing production down to the desired level.

★ ★ ★

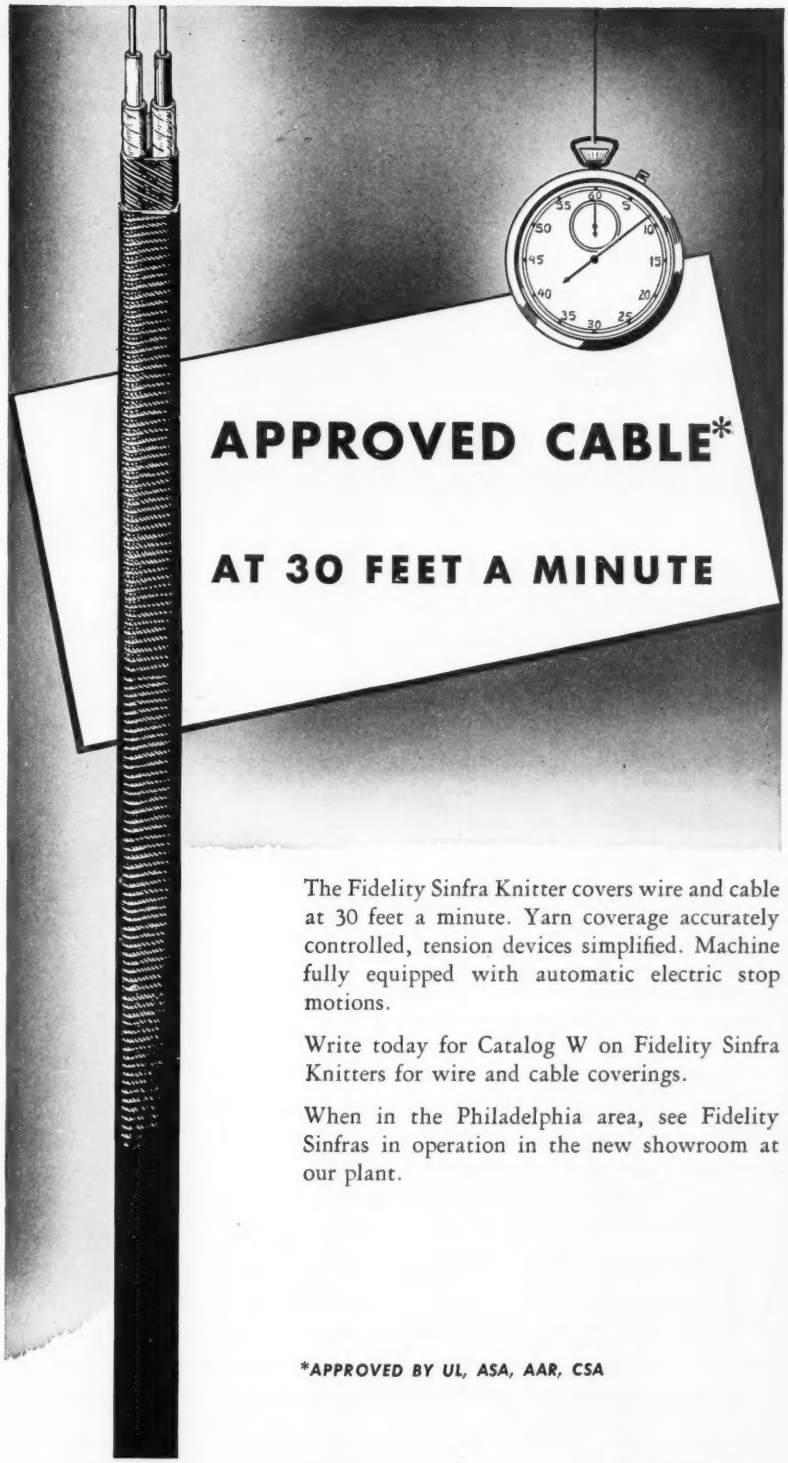
The Velasco plant, largely because of the materials used, is considered the most economical of the six operations. The plant at Painesville uses salt brine produced at Ludington, Michigan, while the other four plants make magnesium from dolomite, a form of limestone.

Technical Progress In Titanium

Progress made in developing titanium into a widely useful industrial metal is described in a Government technical report now available from the Office of Technical Services of the U. S. Department of Commerce.

★ ★ ★

To promote the use of lightweight metals in machinery construction the Army's Engineer Research and Development Laboratories held a symposium in May 1951, on technical advances in titanium. All eight papers given at the symposium are now available in a single technical report entitled "The Titanium Seminar."



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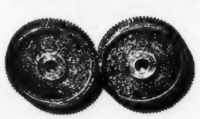

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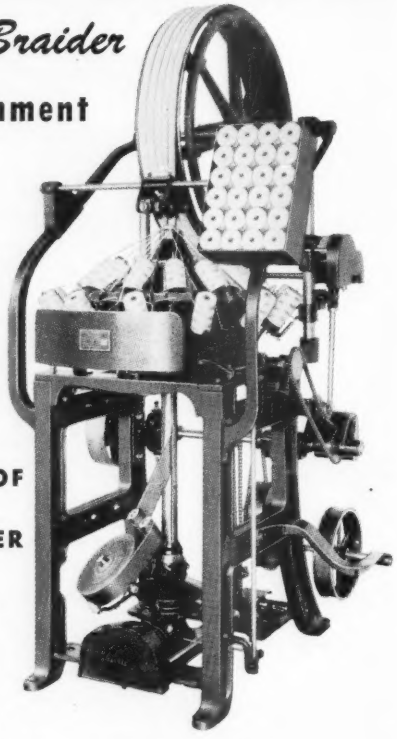

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- Maximum width of tape 3".
- Minimum width of tape ¾".
- Size of hole in tape package 3".
- Head is equipped to run either clockwise or counter-clockwise.
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Each paper is by an expert in the field and includes a bibliography.

★ ★ ★

One paper entitled "History of Titanium" reported that at the time of the symposium two facilities, each for producing 10 tons of titanium metal daily, were under contract; and (2) the annual expenditure for titanium development was $10 million a year.

★ ★ ★

A paper on "Present Production Status of Titanium" reviews: facilities for producing the metal in sponge form, qualities of the sponge metal, and techniques for melting it into ingots.

★ ★ ★

The report also includes papers on: "Production Properties and Uses of High Purity Titanium," "Physical and Mechanical Properties of Commercial Titanium and Its Alloys," "Corrosion Resistance of Titanium and Its Alloys," "Shop Characteristics of Commercial Titanium and Its Alloys," "Casting and Forging of Titanium and Its Alloys," and "Applications and "Potential Uses For Titanium and Its Alloys." The paper on shop characteristics discusses the forming, welding, guiding, and machining of titanium.

★ ★ ★

PB 111083, Symposia On Materials And Design For Lightweight Construction, The Titanium Seminar, 95 pages, Mimeo $2.50. Available from the Office of Technical Services, U. S. Department of Commerce.

April Bibliography of Technical Reports

Technological advances in the electronic, metal-working, chemical, and food industries, are described in Government research reports reviewed in the April issue of the Bibliography of Technical Reports, now available from the Office of Technical Services, U. S. Department of Commerce.

★ ★ ★

Featured in this issue are brief summaries of research reports on

such significant developments as: production of millimeter waves by spark discharges, subminiature high temperature capacitors, liquid filled high frequency transmission lines, protective coatings of electrodeposited alloys, new titanium alloys, gas generators for oxygen, German World War II developments in rapid spray (flash) drying machines, investigation of the mechanism of chemical change in beverage milk products, and the role of pectin in dehydrated foods.

★ ★ ★

In addition the April Bibliography includes many reports on developments in the fields of detergents, paints, safety, and health. Significant among these are: germicidal rinse in dish-washing; pavement-marking materials; aircraft power-plant fire protection; and research on down, feathers, and other filling materials for sleeping bags.

★ ★ ★

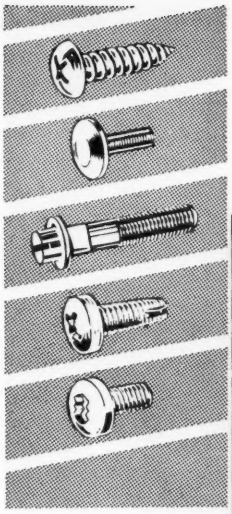
This issue of the Bibliography also includes a list of reports on German World War II developments in synthetic textile fibers, and a list of German World War II chemical patent applications on processes for synthesis of organic chemicals, for hydrogenation of coal, and for the production of detergents, lubricants, catalysts and high octane motor fuels.

★ ★ ★

In all 536 reports are listed from the laboratories of the Federal Government and from cooperating state and foreign governments. Technical fields covered besides electronics, chemistry, metal-working and food are: plastics, electrical machinery, fuels and lubricants, instruments, machinery, medical research, meteorology and climatology, minerals and mineral products, ordnance, photographic and optical goods, physics, psychology, structural engineering, textiles, transportation, and aeronautics.

★ ★ ★

The April, 1953 issue of the Bibliography of Technical Reports sells for $.50 a copy (yearly subscription rate of $5.00) and may be purchased from the Office of Technical Services, U. S. Depart-



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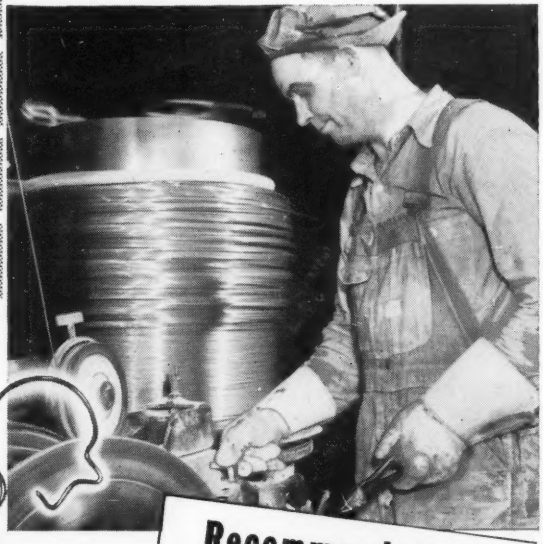

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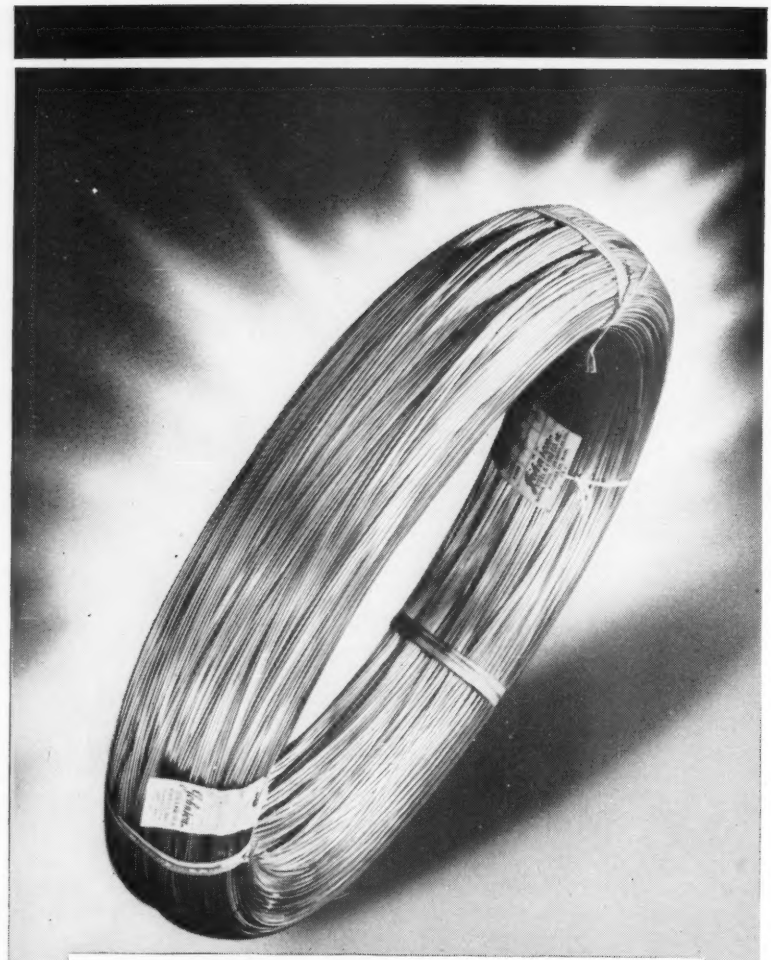

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New Signal Corps Cable May Have Important Civilian Applications

A rugged, light weight, temperature-proof cable that can perform under combat conditions anywhere has been developed by the Army Signal Corps to improve the "phone system" of our fighting men. The cable, known as Spiral-Four, is used in multi-channel field telephone carrier systems first devised in World War II.

★ ★ ★

About 30% lighter in weight and 15% less in diameter, the new cable can withstand a 650-pound load and is unaffected by temperatures between 140 degrees and —67 degrees Fahrenheit. Its frequency range is five times that of the older type.

★ ★ ★

The cable has four copper wire conductors, two for incoming and two for outgoing messages. Around the cable core, stainless steel wire is braided. Containing 18% chromium and eight per cent nickel, the stainless steel's low magnetic permeability and electric conductivity lessen transmission losses, while its strength enables it to carry the load of the cable strung up on poles.

★ ★ ★

The transmission distance of the composite cable, before amplification becomes necessary, is greatly increased by the use of loading coils between pairs of connectors at the end of cable sections. Because of its very high permeability at low field strengths, Permalloy, a high nickel alloy of 79% nickel and four per cent molybedenum, is used for the cores of these loading coils.

★ ★ ★

The communications cable, Spiral-Four promises important peace-

time applications. Its combination of light weight and toughness will make it suitable for work in inaccessible areas where the present extremely heavy and cumbersome cables cannot be readily employed.

Steel Makers Increase in Numbers

Despite mergers and other changes, more companies are making steel now than 14 years ago, according to a comparison of the 1939 and 1953 steel capacity lists of American Iron and Steel Institute. Eighty-four companies are now listed as steel ingot producers, a net gain of 11 companies since 1939. The current list contains more than two dozen companies not listed as ingot producers in 1939. Some of these entered the industry only within the past 14 years. Others, previously only processors of steel, have installed steelmaking furnaces. Several of the newcomers now rank among the 25 largest producers.

★ ★ ★

At the same time, during this interval in which the national steel capacity has risen 44 per cent, a significant trend during the rapid growth of the steel industry has been the establishment of steelmaking plants in new areas. Steel is now being made in more states than in 1939.

★ ★ ★

The comparison of the capacity lists reveals other facts, including the following:

The largest steel producing company's share of the national capacity declined from 35.3 per cent in 1939 to 31.0 per cent as of Jan. 1, 1953.

★ ★ ★

The 11 largest companies in 1939— those capable of making more than 1 million tons of steel annually — increased their combined capacity about 40 per cent during the 14-year interval. In the same length of time the capacity of all other companies making steel has grown nearly 66 per cent.

★ ★ ★

A comparison of the combined capacity of 23 smaller companies

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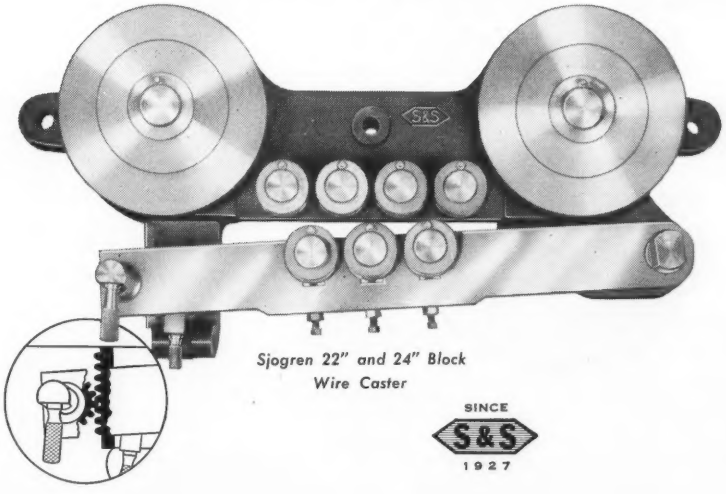
Smaller Sjogren Killers for the wire gauges of .005" up are available from stock in the 8", 12" and 16" block sizes; either clockwise or counter-clockwise rotation.



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In straight line pickling of wire, rod and tubing, RODINE makes available more metal for drawing by protecting steel from acid attack. In batch pickling of sheet steel, RODINE improves the surface. In rapid, continuous strip pickling, RODINE not only saves acid and metal, but also prevents over-pickling during line shutdowns.

◀ *This steel surface was pickled in an uninhibited acid bath. Note the deep pits, and that the surface is visibly crystalline.*

This surface was pickled exactly like the one above except that "RODINE" was added to the acid solution. Only scale pockets and roll marks are visible; no pitting occurred. ▶

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which were in business in both 1939 and 1953 — each company having less than 100,000 tons' annual capacity in 1939—shows that the group has increased its combined capacity about 51 per cent during the 14-year interval.

Abstracts

CABLES D'ACIER ET CONDUCTEURS ELECTRIQUES AERIENS. STEEL CABLES AND ELECTRIC OVERHEAD CONDUCTORS, O. Bachmann. *Schweiz Arch* etc. 1953 Vol 19 (1) pp 14-22 (Jan.) (In French). In introduction article discusses beginning of wire drawing. Two illustr. of ancient drawing operations and function of drawing die explained. 12 illustr.

★ ★ ★

APPLICATION DE L'ELECTRODEPOSITION A L'ESSAI DE TRACTION DE FILS FINS. APPLICATION OF ELECTRODEPOSITION FOR DRAWING TESTS OF FINE WIRES, C. Caillot. *Ingenieurs & Techn* 1952 (48) pp 39-40 (Oct.) (In French). Wires of 0.4 mm dia and less considered. Trouble occurs mostly as consequence of imperfect sliding, leading to premature rupture at pulling device ('horn', winding drum, parallel clamping jaws) or at point of die exit. Electrodeposition aims at providing layer which is subject to clamping deformation by jaws, preventing damage to wire core itself. Coating must be perfect and uniform. Alkaline copper proved most advantageous coating material when hard chromium, nickel, zinc, copper and cadmium plating tested. 2 illustr, 2 tables.

★ ★ ★

WEBEDRAEHTE RUND. ROUND WIRES FOR WEAVING GERMAN STANDARD DRAFT DIN 4186. DRAHTGEWEBE. WIRE MESHES. GERMAN STANDARD DRAFT DIN 4189, Dtsch Normenausschuss. *Draht-Welt* 1952 Vol 38 (9) pp 105-109 (May—I) (In German). Draft standards provide wires for round weaving from 0.02 to 12.5 mm dia; tolerances also indicated. Mesh widths range from 0.032 to 25 mm and in many instances more than one wire dia is given (up to 7), but some open sieve areas are standardized as preferable, such as 74.5%, 64%, 51% and 37.9%. In a graph it is shown that sieves are systematically arranged. Date of draft is Jan. 1952. It may be expected that the final standard will be issued soon.

★ ★ ★

DIE KOSTENRECHNUNG IN DRAHTZIEHEREIEN. COST CALCULATION FOR WIRE DRAWING WORKS, W. Hulvershorn. *Draht-Welt* 1952 Vol 38 (10) pp 121-123 (May—II); (12) pp 141-142 (June—II) (In German). General article indicating simple method for calculating costs.

★ ★ ★

EMPIRIC AND GRAPHIC METHOD OF DETERMINATION OF DRAWING FORCE, M. Schneider. *Prace Gl Inst Megalurgii*, Katowice 1951 6 pp; *Polish Techn Abstr* 1952 (4) p 61 (Original

in Polish). Research into mechanical properties of drawn steel rods. Rod drawing tests. Establishing formula for calculation of drawing force: monogram.

★ ★ ★

WIRE DRAWING ON MULTIBLOCK WIRE DRAWING MACHINE. M. Schneider. *Prace Gl Inst Metalurgii*, Katowice 1951 9 pp ; *Polish Techn Abstr* 1952 (4) p 59 (Original in Polish). Calculation of drawing force. Description of operation of single block wire drawing machine. Possibility of wire slipping. Description of operation of multiblock wire drawing machine. Calculation of multiblock wire drawing machine operating on slip principle. Calculations on transformation of deformation and friction work into heat.

★ ★ ★

DIE INDUSTRIE DER ELEKTRISCHEN DRAEHTE UND KABEL IN ENGLAND. THE ELECTRIC WIRE AND CABLE INDUSTRY IN ENGLAND. Anon. *Wirtschaft & Wettbewerb* 1952 Vol ½ (12) pp 776-779 (In German). Article mainly based on report of monopolies and restrictive practices commission. Gives historical survey and describes activities of cable manufacturers association, dealing with different types of cables and international agreements.

Aluminum Substituted for Copper in Transformers

Distribution transformers with aluminum windings can be built with approximately the same characteristics as the present copper designs, Raymond W. Smith, general manager of the **General Electric Company's** distribution transformer department, announced.

★ ★ ★

Mr. Smith said, "This will enable the company to meet customers' need if there is any future shortage of copper or a marked increase in its price, compared to aluminum."

★ ★ ★

"In spite of the lower conductivity of aluminum and increased manufacturing problems, distribution transformers in a number of ratings have been produced using aluminum windings with the overall weight, dimensions and electrical characteristics practically identical to copper transformers," he added.

★ ★ ★

"The company does not plan to shift to the use of aluminum at this time," Mr. Smith emphasized. "However, several hundred development and production transformers with aluminum windings have been built in sizes five to 333 kva for voltage classes of 15,000 volts and less."

An Open Letter to WIRE MANUFACTURERS

Gentlemen:

Whenever you sell non-metallic sheathed cable, armored cable, or building wire to an electrical contractor, the first thing he looks for is the Underwriters' label. That label tells him that the electrical, moisture-resistant, flame-proofing, and other similarly important requirements have been met. But when the contractor actually begins to install the wire, he is then more concerned with its workability during installation:

Is it sticky in coils or on reels and spools?
Does the finish flake off when the wire is bent or pulled through joists?
Does it mark up walls?
Does it make workmen's hands unduly dirty?
And above all--does it cost the contractor overtime?

The Underwriters' label can't tell him these things; he finds them out by experience. And if experience provides the wrong answers, then your wire --as good a product as it is in itself--gets a bad name. Avoid such complications by making these checks:

Are your present saturants and finishes the most suitable materials for your products and methods of application?
Are you misapplying a saturant? ...using one designed for cotton on glass braid, for instance?
Are you getting all that you are paying for?

If you are not obtaining satisfactory performance from your present saturants and finishes, please write to us. We maintain a highly-trained technical staff which devotes its time to perfecting paints, varnishes, and saturants to meet particular requirements. At no obligation, we will be happy to run a series of tests and then make specific and impartial recommendations as to the materials and methods best suited to your own situation.

Cordially,

E M Paschall

EMP:GC

President

Solar Compounds Corporation
Solar Varnish Corporation
The Originator of Wire Color Solutions
1213 WEST BLANCKE STREET • LINDEN, N. J.

Outstanding Personalities of the Wire Industry

Curtis Voigtlander Retires

Curtis Voigtlander retired on February 1, 1953, after twenty-five and a half years as Superintendent of the Wire Mill at **Union Wire Rope Corporation.** Mr. Voigtlander will continue to make his daily appearance at the plant, serving as a consultant to make further developments on machinery he has designed, until the latter part of May, when he will take up permanent residence at his place on the seashore near Wareton, New Jersey. Present plans are that Mr. Voigtlander will return for a few months each year to serve as consultant to the Wire Division of Union Wire Rope.

★ ★ ★

Born in Kiel, Germany, Mr. Voigtlander was brought to America in 1884. However, during his early boyhood the Voigtlanders moved to Trenton, New Jersey, where he received most of his formal education. He graduated from the Stevens Institute of Technology in 1909 with an engineering degree. Mr. Voigtlander entered the wire industry at an early age and has been associated with such wire producing companies as John A. Roebling's, George C. Moon Co., Wickwire Spencer Steel Corp., Seneca Wire and Mfg. Co., and, of course, the Union Wire Rope Corporation.

Curtis Voigtlander * * * *

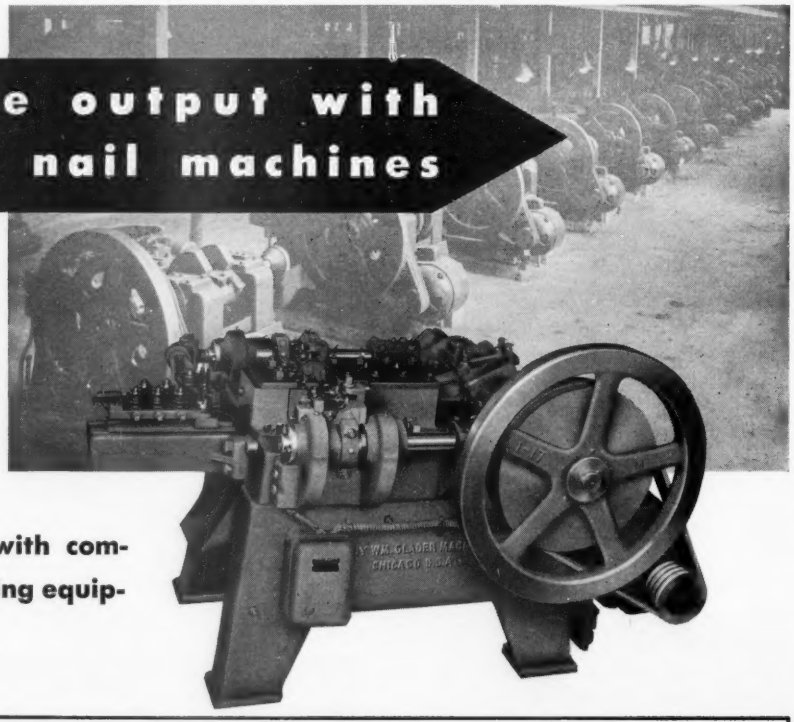
★ ★ ★

In the wire industry Mr. Voigtlander is a man whose judgment is much sought after and highly respected. Wire men from all over the United States and several foreign countries have made trips to the Midwest to discuss their problems and seek ways to improve their product. Mr. Voigtlander has helped us to keep well ahead in the field. For several years he has served as a Director of The Wire Association.

★ ★ ★

After September 1st his services as a general wire mill consultant will be available.

high tonnage output with GLADER wire nail machines



A size and type machine available to make everything from tacks and brads to 12" spikes with maximum efficiency.

Write for 12 page bulletin with complete information on nail making equipment.

WM. GLADER MACHINE WORKS 210 N. RACINE AVENUE CHICAGO 7, ILLINOIS

Export Dept.: 122 E. 42nd Street, New York 17, N. Y.

Unequaled-anywhere!

IT ALL COMES DOWN to one fact... that Roebling high carbon flat spring steel is absolutely unequaled for cutting down preparation time, machine stoppages and rejects. What's more, it's made as you want it... annealed, hard rolled untempered; scaleless tempered; tempered and polished, blued or strawed.

You *pay* for the best every time you buy flat spring steel. Make sure you *get* it. Specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

ROEBLING

A subsidiary of The Colorado Fuel and Iron Corporation

California giant Sequoias—largest of all trees.

BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

PHOTO BY MC MANUS

Prepare Now to

ADVERTISE in the

Special October Convention Issue of

WIRE AND WIRE PRODUCTS

In this important "special," to be wholly devoted to the Annual Convention of The Wire Association, there will be many added values to justify your being suitably represented with your best advertising. It is an opportunity to identify your company as an integral part of this great industry. Join with others to make this coming Convention an outstanding success.

You are offered exceptionally high reader-interest in the October, plus added circulation and longer than average life of the issue. For advertisers, it is value packed.

The Wire Association will meet in Chicago in 1953, from Nov. 9th through the 12th, at the La Salle Hotel. It will feature technical sessions, plant inspection trips, the Annual Luncheon and a banquet.

The issue contains pre-prints of the technical papers to be presented at the Convention. It contains the final program of events. Anything and everything bearing on the Convention is included.

WHO SHOULD ADVERTISE? Any producer and seller of rods, wire, or machinery, equipment and supplies sold to the wire industry. If you are selling these products, put your best foot forward in the OCTOBER CONVENTION ISSUE and cash in on the extraordinary interest in all things pertaining to wire at this time.

ADVERTISING RATES SENT UPON REQUEST

WIRE AND WIRE PRODUCTS

J. EDWARD DONNELLAN, *Vice President*

453 MAIN STREET **STAMFORD, CONN.**

"It Pays to Advertise"

Made Works Manager of Roebling Plants

William C. Ridge has been appointed Works Manager in charge of the manufacturing operation of the Trenton and Roebling, New Jersey plants of the **John A. Roebling's Sons Corporation,** it was announced by Charles R. Tyson, executive vice-president. The John A. Roebling's Sons Corporation is a wholly-owned subsidiary of The Colorado Fuel and Iron Corporation, the nation's ninth largest steel producer.

★ ★ ★

Mr. Ridge succeeds to the duties formerly performed by J. D. Thompson, who has resigned to accept another position.

★ ★ ★

Mr. Ridge came to the Roebling organization in 1942 in the Engineering Division. Several months later he was transferred to the Production Division to work in the standards engineering department then being organized, where he became chief industrial engineer and then manager of standards engineering. Since 1950 he has directed the operations of the Electric Wire Division as manufacturing manager.

★ ★ ★

Mr. Ridge was graduated from the Massachusetts Institute of Technology in 1924 with the degree of Bachelor of Science in Mechanical Engineering, and later studied in the graduate school of business administration of the University of Pittsburgh.

William C. Ridge, Wks. Mgr., John A. Roebling's Sons Corp. * * * *

Sperry Reelected Scovill President

Leavenworth P. Sperry, was reelected to his ninth consecutive term as president of **Scovill Manufacturing Company** at the annual directors' meeting held on April 30th in the Company's main office. All twelve members of the Board had been reelected at the annual stockholders' meeting held April 20th.

★ ★ ★

Other officers reelected include **William M. Goss,** executive vice-president; **Mark L. Sperry** and **Arthur P. Hickcox,** vice-presidents; **Mark L. Sperry, 2nd,** treasurer and general counsel, and **Heminway Merriman,** secretary.

★ ★ ★

Vice-presidents Paul E. Fenton and **Chauncey P. Goss** continue in charge of manufacturing sales and mill sales respectively; **Alan C.**

SEE THE DIFFERENCE YOURSELF...
BETWEEN JUST ANY SPOOL AND
Superior MPS
NO-CREV SPOOLS
No-Crev Spools eliminate the conventional crevice at the inner junction of spool head and barrel. No more production slow-ups due to fine wires getting caught in such a crevice. You can now have continuous trouble-free high speed winding.
We invite your inquiries — let us tell you more about No-Crev Spools. Write us today.
MPS
NO-CREV SPOOLS
give you brute strength with dimensional precision, concentricity, and balance. Another patented MPS development engineered to help you!
Mossberg PRESSED STEEL Corporation
18 WEST ST., ATTLEBORO
MASSACHUSETTS, U. S. A.
Telephone Attleboro 1-0848
#108

Curtiss continues as vice-president in charge of employee relations, and **Henry W. Wild** as vice-president in charge of manufacturing departments and tool division.

★ ★ ★

The vice presidents in charge of the company's divisions are **Thomas B. Myers**, Hamilton Beach Company Division, Racine, Wis.; **H. Wesley Leavenworth,** Oakville Company Division, Oakville, Conn.; **Selden T. Williams,** A. Schrader's Son Division, Brooklyn, N. Y.; and **Samuel G. Gaillard, Jr.,** Waterville Division, Waterville, Conn.

Appointed Purchasing Agent by Philadelphia Steel & Wire

John T. Messert has been appointed purchasing agent of the **Philadelphia Steel & Wire Corporation** to succeed Edward Hitzeroth who has retired.

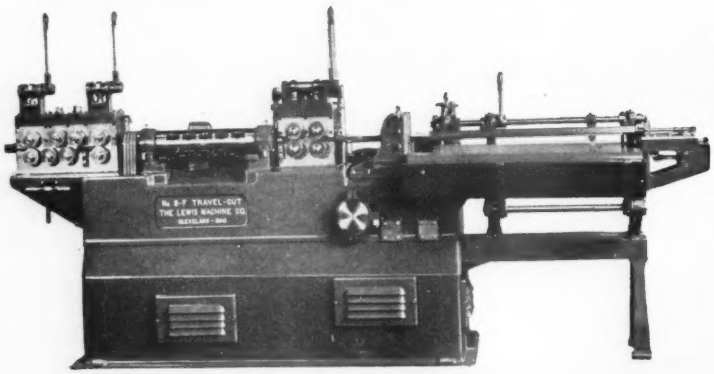
★ ★ ★

Mr. Messert became associated with this company in 1941 as director of priorities, a position which he held until 1945 when he was appointed assistant purchasing agent.

Fast, Accurate, Economical

STRAIGHTENING and CUTTING

with LEWIS TRAVEL-CUT



22 Models to handle from 1/16" to ¾" Round, Hex, Flat, Shapes.

Simple in design, rigid in construction, Lewis TRAVEL CUT will deliver continuous dependable service under the most severe, high production conditions—day in, day out. Feeds wire from the coil, straightens accurately, gauges to uniform length, and cuts clean without stopping the wire. For steel, brass, aluminum and alloy wire. Cut your cutting costs with the Lewis TRAVEL CUT. Full details on request.

Exclusive Representatives

EAST: Penn Machinery Co., 117 North Third Street, Philadelphia 6, Penn.

MIDDLE WEST: Steel & Wire Machinery Co., 15457 Euclid Ave., Cleveland 12, O.

CENTRAL: Moslo Machinery Co., 2443 Prospect Avenue, Cleveland 15, Ohio.

WEST COAST: Hoffman & Heartt, 3005 So. Grand Ave., Los Angeles 7, California.

CANADIAN: Empire Engineering Co., 11 Wellington St. E., Toronto 1, Ontario.

CONTINENTAL EUROPE: Gaston E. Marbaix Ltd., Devonshire House Vicarage Crescent, London S. W. 11, England.

The LEWIS MACHINE Company

3441 E. 76th Street, Cleveland 27, Ohio

Also agents in Paris, Stockholm, Rotterdam, Brussels, Zurich, Milan, Bombay and Melbourne

Industrial Oven Manufacturer Given Trinks Award

Carl F. Mayer, a leading figure in the industrial oven field is one of four engineer-executives to receive the annual Trinks Award for outstanding achievement in the industrial heating industry. The presentation was made on May 5th at a banquet in the Duquesne Club in Cleveland, sponsored by the Award Committee.

★ ★ ★

Similarly honored with Mr. Mayer, who is president of The Carl Mayer Corp., Cleveland, Ohio, were **H. H. Harris,** president, General Alloys Co., Boston, Mass.; **Carl I. Hayes,** president, C. I. Hayes, Inc., Providence, R. I.; and **J. Spotts McDowell,** technical assistant to the president, Harbison-Walker Refractories Co., Pittsburgh, Pa.

★ ★ ★

The Award is bestowed by a judges' panel, among candidates nominated by the industry, for the most notable contributions to economic or scientific progress in industrial heating. It was established in honor of Dr. Willibald Trinks, professor emeritus of Carnegie Tech and world authority on industrial heating problems.

★ ★ ★

Mr. Mayer was selected by the Award Committee for his design and engineering advancements in the industrial oven field. He is well known in the industry for his early development of steel insulated panel type ovens.

★ ★ ★

In making the Award, **I. Stanley Wishoski,** editor of Industrial Heating, also cited Mr. Mayer for his pioneering development in industrial ovens, air heaters, furnaces and allied equipment for which he holds some 17 patents. The more than 30 technical papers and articles he has published on industry problems have won him recognition as an international authority on industrial ovens.

Sheet and Tube Advances Four Executives

Four advancements have been announced in administrative departments of **The Youngstown Sheet and Tube Company** following the annual meeting of directors on April 28th.

★ ★ ★

Walter E. Watson, first vice president and a director, was elected to the executive committee, filling the vacancy created by the death of Frank Purnell, chairman of the board and a member of the executive committee.

★ ★ ★

Alfred S. Glossbrenner, vice president in charge of operations, was elected to the board of directors, succeeding Mr. Purnell on the board.

★ ★ ★

Lew E. Wallace, general manager of sales, was elected assistant vice president.

★ ★ ★

Myron H. Watkins, assistant general manager of sales, was appointed general manager of sales.

Named to New Post by Sprague

Appointment of **William M. Allison** as technical advisor has been announced by **Carroll G. Killen,** Manager of Field Engineering, **Sprague Electric Company,** North Adams, Mass.

★ ★ ★

Mr. Allison has been a senior executive in the Sprague Research and Engineering Department for the past 20 years, contributing to nearly all phases of Sprague technological development in his prior posts of supervisory engineer and chief design engineer. He is the holder of a half dozen patents pertaining to capacitors.

★ ★ ★

A graduate of Williams College with honors in Chemistry, Mr. Allison did post-graduate work at Yale and Rensselaer Polytechnic Institute. He is a member of Phi Beta Kappa, the Institute of Radio Engineers and the American Chemical Society.

Spring Company Appoints Executives

Automatic Spring Coiling Co., Chicago, has appointed **Robert G. Lambrecht** as assistant general manager, **Ruth M. Slafter** as buyer and **John E. Connell** as office manager.

Two Men Assume New Posts at Union Wire Rope

Organizational changes in the Wire Mill were announced recently, effective February 1, 1953, by **J. H. Hatch,** Vice President and Production Manager. **Stewart S. Gray,** Assistant Vice President has been assigned the responsibility of Superintendent of the Wire Mill, and **Wm. R. Cook** has been appointed Assistant Superintendent, Wire Mill.

★ ★ ★

Mr. Gray came to Union Wire Rope Corporation on July 1, 1940, was appointed Operations Engineer in 1946, and was made an Assistant Vice President in March, 1951. He is a graduate of the University of Kansas with a degree of Bachelor of Science.

★ ★ ★

NRM

"ALL-IN-ONE"...
WIRE COVERING UNIT

Includes:

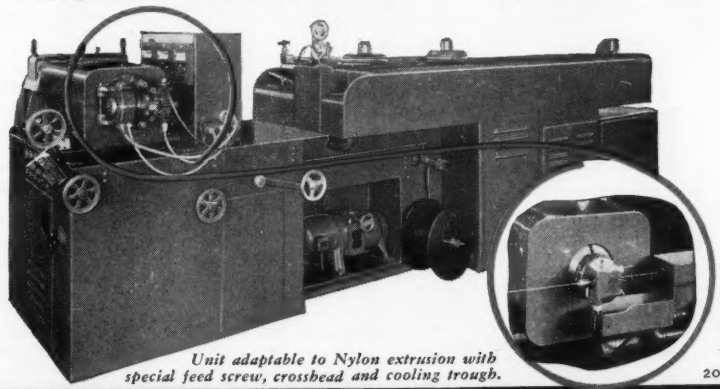
NRM's 1½" Package Wire and Cable Covering Unit packs the maximum of production into the minimum of floor space. Measuring only 13'x4'2" on its single base, this compact unit carries all the equipment needed to cover wire up to ¼" covered diameter at speeds up to 1000 feet per minute.

All wire covering plastics can be handled on this precision-built equipment — including Nylon, with a few simple changes. The automatic driven let-off is controlled by wire tension. The electrically heated 1½" extruder is equipped with Balanced Heat Control. The haul-off capstans are variable speed driven. The torque controlled dual take-up has 16" standard reels. Ample space is provided for a spark tester.

This unit is also available with an oil heated extruder.

Write, right now, for detailed information!

- Driven Supply Reel
- Wire Straightener
- NRM 1½" Extruder
- Variable Speed Drive
- Electric Die Heater
- Water Cooling System
- Dual Haul-off Capstans
- Dual 16" Take-up
- Adjustable Traverse
- Single Base Mounting



Unit adaptable to Nylon extrusion with special feed screw, crosshead and cooling trough.

2022

NATIONAL RUBBER MACHINERY CO.

General Offices & Engineering Laboratories: Akron 8, O.
East: 384 Getty Ave., Clifton, N. J.
West: S. M. Kipp, Box 441, Pasadena 18, Calif.
Export: Omni Products, 460 4th Ave., New York 16, N. Y.

Creative Engineering

Mr. Cook has been with Union Wire Rope Corporation since 1937 and worked in the Maintenance Department and General Office before being assigned to the educational field in 1942. In 1943 he went into the Wire Mill division and has served on the production scheduling desk as well as being active in the field of instruction in Industrial Supervisory Training with the University of Kansas School of Business, Extension Department.

Elected Vice President of Bridgeport Brass

John S. Dawson, secretary and general counsel of the **Bridgeport Brass Company,** was named a vice president of the company at the annual meeting of the board of directors held in April at the company's general offices, 30 Grand Street, Bridgeport, Conn.

★ ★ ★

Mr. Dawson joined the Bridgeport Brass Company in 1941, having formerly practiced law with the Hurlburt, Jones, Hall & Bickford firm of Boston, Mass.

★ ★ ★

In 1947 he was named secretary of the company and his election as a vice president followed the annual meeting of stockholders.

★ ★ ★

Mr. Dawson is a graduate of the Harvard Law and Business Schools and is an associate member of the Harvard Business School Alumni Council.

Continental Steel Sales Promotions

Continental Steel Corp., Kokomo, Ind., has appointed **L. B. Alley** to succeed **F. A. Lewis** as sales manager, chain link and ornamental fence division. Mr. Lewis recently became sales manager, merchant trade division. **Jack E. Elliott** now replaces Mr. Alley as assistant sales manager, chain link and ornamental fence division.

Transferred by Carboloy

Joseph L. Geenens, formerly superintendent of the Alnico permanent magnet section of Carboloy's operations in Schenectady, N. Y., has been appointed manufacturing superintendent of the Edmore, Mich., plant of **Carboloy Department of the General Electric Company.**

★ ★ ★

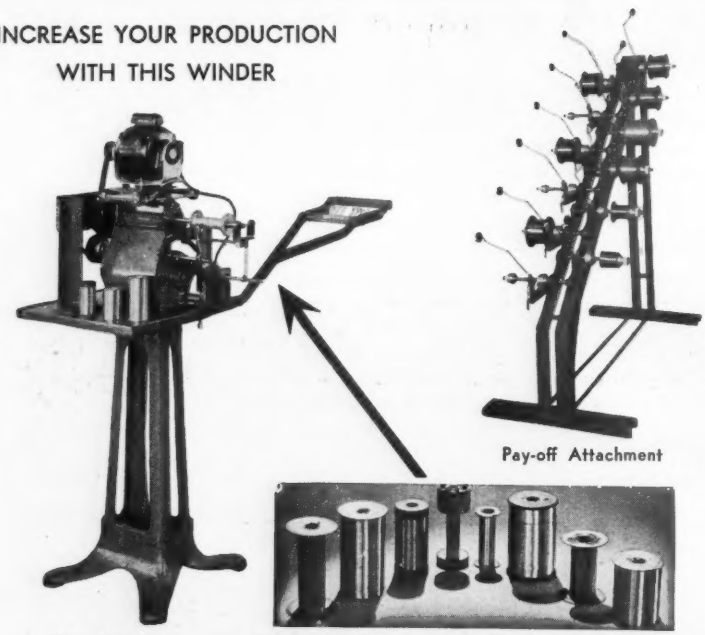
According to J. C. Morrison, Edmore plant manager, Mr. Geenens will be responsible for all manufacturing activities at the new Carboloy plant, including carbide tool fabrication and Alnico permanent magnet production.

★ ★ ★

A native of Flanders, Belgium, Mr. Geenens has been associated with the General Electric Company since he came to this country in 1929. He served as general foreman of magnet production in Schenectady when Carboloy Department took over the Alnico permanent magnet business from General Electric's Chemical Division in 1950, and last year was named superintendent.

STANDARD UNI-DRIVE WIRE WINDER

INCREASE YOUR PRODUCTION WITH THIS WINDER



Wire Winder

Pay-off Attachment

Various types of supply packages that may be wound on Standard Uni-Drive Wire Winder.

PAYOFF

Our payoff attachment is made with self-aligning ball bearings and a compensating attachment to control the tension of each end. Applies same tension when spool is empty as when full.

The new Uni-Drive Winder with Payoff Attachment is new in design and incorporates several improved and tested features. Production is stepped up through increased speed. It produces smooth, even and accurately wound spools of wire in single or multiple ends. All strands parallel—no over or under-winding. Automatic Stop-Motion controls each strand. Compensating attachment produces perfectly controlled tension. Traverse adjustable from 1¾" to 5½" between spool heads without changing cam. Designed especially for winding wire to be braided and shielded for electrical conductors up to ¾" diameter.
Payoff can be equipped with Carboloy Guide Inserts at additional cost.

STANDARD MILL SUPPLY
PAWTUCKET, R.I., 1064-1080 Main St.
NEW YORK, N.Y., 6708 Empire State Bldg.
CHARLOTTE, N. C., 2319 Hutchison Ave.

Made Works Manager of Chase Brass Cleveland Plant

Albert T. Both, former research assistant in metallurgy at the Chase Metal Works in Waterbury, has been appointed manager of the Cleveland Mill Division of the Chase Brass & Copper Company. He has been serving as general superintendent since October, 1947.

★ ★ ★

Mr. Both's appointment was made public by Walter L. Smith, vice president of the Chase subsidiary of Kennecott Copper Corporation. Mr. Both assumed his new duties April 1st.

★ ★ ★

A native of Meriden, Conn., Mr. Both attended Tri-State College and the Massachusetts Institute of Technology. Following a brief span of service with the International Silver Company of Meriden, he joined the staff of the Chase Metal Works.

★ ★ ★

On the completion of the Chase brass mill in Cleveland he was transferred there as superintendent of the rod mill, a position he held from 1930 to 1946, when he was made assistant mill superintendent. He was made general superintendent the following year.

★ ★ ★

Mr. Both earlier had announced the appointment of his successor as general superintendent, **Charles W. Yarrington,** formerly assistant plant manager of the McCook branch of Reynolds Metals Company. He joined the Chase Company staff on September 1, 1952 as staff engineer.

Firth Sterling Advances Two Executives

Firth Sterling Inc. announces the appointment of **T. G. Barnes** as General Sales Manager, effective immediately. Mr. Barnes came to Firth Sterling as special assistant to the Chairman in April 1950 from Reynolds Metals Company. In March 1951 he became Production Manager which position he held until his present appointment. Mr. Barnes is a graduate of Virginia Polytechnic Institute and served as a Lt. Col. in the Corps of Engineers, U. S. Army, during World War II.

★ ★ ★

G. A. Wilson, formerly General Superintendent of the Carbide Division, succeeds Mr. Barnes as Production Manager. He came with Firth Sterling in August 1949 as Chief Industrial Engineer. He is a graduate of Georgia Institute of Technology and served as Captain of Combat Engineer Units, U. S. Army, during World War II.

U. S. Rubber Promotes Two

Two major organizational changes in the **Naugatuck Chemical Division, United State Rubber Company,** have been announced by J. P. Coe, vice president and general manager.

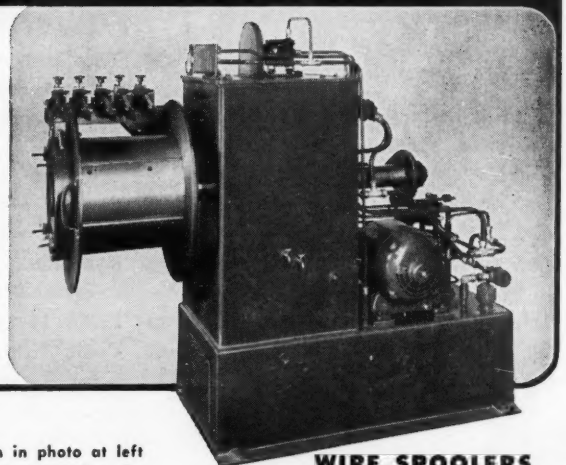
★ ★ ★

Dr. Earle S. Ebers, formerly

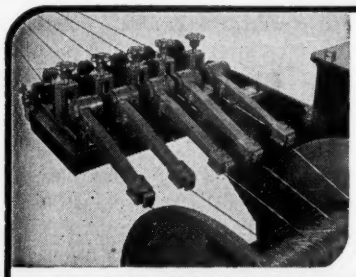
COIL 5 STRANDS IN 1 OPERATION

SECO TRAVERSE REEL SPEEDS UP PRODUCTION

This new SECO Traverse Reel winds five separate coils of flat wire or narrow strip *at the same time.* Coils are oscillated-wound, permitting much longer lengths than conventional ribbon-wound coils. Smooth, powerful hydraulic operation gives coiling speeds as high as desired, accurately controlled from zero to top running speed.



WIRE SPOOLERS
Single and Multiple type. Speeds up to 4,000 feet per minute.



Method of coiling is shown in photo at left The complete block oscillates, traversing the wire into five 3" wide coils. Traverse and tension control are extremely accurate. 1/8" to 1/2" wide flat wire can be wound. Block has 16" inside diameter and 24" outside diameter.

Call or Write for Information and Complete Data — No Obligation

P. O. Box 737, Warrensville Station, Cleveland 22, Ohio

STEEL EQUIPMENT CO.

SECO

sales manager of Kralastic and Vibrin resins, was named director of research and development to replace M. G. Shepard, who has retired.

* * *

Dr. D. Lorin Schoene, formerly manager of plastics development, was appointed to the post of assistant director of research and development.

* * *

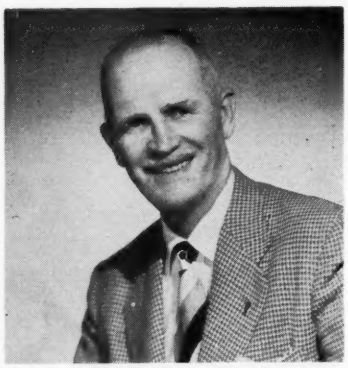
In 1937 Dr. Ebers joined U. S. Rubber as a research chemist in the company's general laboratories at Passaic, N. J., and for nine years was engaged in fundamental and applied research on rubber and plastics. In 1946 he became manager of plastics development for Naugatuck Chemical, and in 1949 he was appointed to the sales post he is leaving for his new assignment.

* * *

Dr. Schoene joined U. S. Rubber in 1939 as a chemist in the company's general laboratories. Shortly afterwards he was transferred to the Far East where he became a group leader in chemical development concerned with the processing of natural rubber latex. In 1942 he was appointed a research chemist for Naugatuck Chemical. In 1947 Dr. Schoene was named manager of organic research for Naugatuck Chemical, and in 1951 he was appointed manager of plastics development.

Appointed Chief Engineer of Equipment Concern

R. J. Seymour, Vice President of **Wire Equipment Manufacturing Co., Inc.,** whose new address is now 1168 South Olden Avenue, Trenton, N. J., is pleased to announce the appointment of **Knute C. Bencke** as Chief Engineer to head a new division of the company that will design, engineer and manufacture looms, bobbin winders and allied equipment to the wire weaving industry.



Knute C. Bencke, Chf. Eng'r., Wire Equipment Manufacturing Co., Inc., Trenton, N. J. * * * * *

* * *

Mr. Bencke was employed as a designer for the Woven Wire Fabrics Div. of the John A. Roebling's Sons Co. for eleven years, and was recently employed by the Aluminum Co. of America as a Consulting Engineer in wire weaving. He has also been associated as a designer with the DeLaval Steam Turbine Co. and with American Steel and Wire Co.

* * *

The Wire Equipment Manufacturing Co., Inc., now offers a complete enineering and manufacturing service to the woven wire business including consulting on plan lay-out and operation.

- Caterpillar Pull-outs
- Standard Sets of Spark-Testing Equipment
- Take-ups and Re-spoolers
- Reelers
- Coilers
- Spoolers
- Collapsible Coiling Reels
- Wire Sparkers and Accessories
- Hand Locators
- Electrode Units and Stands
- Measuring Machines, Counters and Accessories
- Wire Guide Units
- Pay-off Reels Stands
- Electronic Devices
- Shaftless Take-ups and Payoffs
- Wire Pre-Heater
- Disk Brakes and Controls, Drag Units and Slip Clutches
- Wire Marking Machines, Type Strips, Inks
- Labelling Machines
- Pneumatic Equipment and Controls
- Special Machinery for the Wire Industry
- Hydraulic Equipment and Controls
- Hi-Pot Test Sets
- Cable Handling Equipment for Warehouse Use

See Page 566 for News of JLE Heavy Duty Coiler

JAMES L. ENTWISTLE CO.
1475 ELMWOOD AVE. PROVIDENCE 7, RHODE ISLAND, U. S. A.
European & South American Agents: M. CASTELLVI, INC. 150 BROADWAY, NEW YORK 38, NEW YORK
British Associate: GENERAL ENGINEERING CO., LTD. BURY ROAD, RADCLIFFE, LANCASTER, ENGLAND

Naugatuck Chemical Sales Appointments

Donald E. Fowler has been named to the new post of assistant sales manager of the latex and aqueous dispersions group, **Naugatuck Chemical Division, United States Rubber Company,** according to an announcement by A. W. Holmberg, sales manager.

★ ★ ★

Mr. Holmberg also announced the appointment of **Thomas D. Ramsey** and **Bradley A. Smith** as technical sales representatives on the West Coast, **Lawrence H. Bruce** as technical sales representative in the New York area, and **Arnold P. Paulk** as technical service manager at the Los Angeles plant.

Lewis E. Spear

The Pacific Wire Rope Company of Los Angeles, California, has announced with deep regret the passing on March 1, 1953, of its highly esteemed president and founder **Lewis E. Spear.** Mr. Spear established his wire rope enterprise on October 2, 1909, and through his inspiration and skillful guidance, had developed the business to important proportions in the wire industry.

John R. Pettit

John R. Pettit, 32, assistant to the plant engineer of **Hooker Electrochemical Company** was killed in a train wreck at Conneaut, Ohio, March 27th.

★ ★ ★

He had been with Hooker since 1941 as a chemical engineer, was transferred to Ashtabula, Ohio in 1950 as plant superintendent of the Hooker-Detrex plant. He had just been transferred back to Niagara Falls as assistant to the plant engineer.

Establishes Office as Wire Mill Consultant

Steel wire mill consulting engineering services are now offered by **William E. Leonard,** 21 Marsh Ave., Worcester 5, Mass., who recently has made his services available to our industry.

★ ★ ★

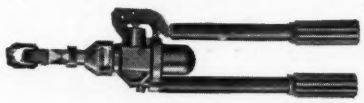
Mr. Leonard retired from a lifetime of active work with American Steel and Wire in Worcester. He has been a prolific inventor of both machinery and processes relating to various forms of low and high carbon steel wire production and has accumulated a broad experience that should prove of great value to those who are faced with wire problems.

Appointed General Superintendent of Inco's Huntington Works

L. E. Grubb, former General Superintendent of Inco's Bayonne, N. J., Works, has been appointed General Superintendent of the Huntington, W. Va., Works of **The International Nickel Company, Inc.,** effective May 1, 1953, according to an announcement by Dr. Paul D. Merica, President of the company. At the same time, **P. H. Flynn,** was named General Superintendent succeeding Mr. Grubb.

The Right Cutting Tools

CAN CUT YOUR COSTS, TOO!



MODEL 200-A

NEW, POWERFUL, HAND OPERATED HYDRAULIC CUTTER

Cuts ½" reinforcing rod and other comparable materials with ease. Simple hand pump action develops 8500 p.s.i. exerting 10 tons cutting force. Blades easily removed for resharpening. Weight —15 lbs. Length—24".

MANCO

SPECIALIZED CUTTING TOOLS

Cut reinforcing rod, chain, bolts, wire rope

NEW IN BOLT CUTTERS!

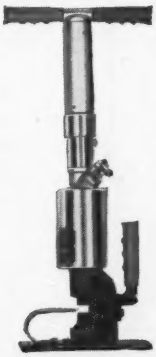
Reversible Jaws Give Double Blade Life

New, exclusive design gives you twice the cutting life from one set of jaws. Handles are *guaranteed against breakage.* Available in 30" size. Capacity, ½" bolts, ⅜" rod. Jaws alone available to fit standard 30" bolt cutters

MODEL 2 MCC

PORTABLE HYDRAULIC GUILLOTINE

Heavy-duty hydraulic cutter provides 22½ tons cutting force yet weighs only 40 lbs. Cuts ¾" reinforcing rod, 1" log chain. Other similar models to cut wire rope. Easy hand pump action. Also available with a variety of power pump units for high speed production cutting.



MODEL 20-A

See Your Distributor or

Write **MANCO MFG. CO.,** BRADLEY, ILLINOIS

A Review of Recent Wire Patents

No. 2,633,677, COIL GRINDING EQUIPMENT, patented April 7, 1953 by Wallace K. Lowe, Syracuse, N. Y., assignor to Crucible Steel Company of America, New York, N. Y., a corporation of New York.

There are 10 claims to this continuous wire coil grinding apparatus.

★ ★ ★

No. 2,633,681, CUTTING SURFACE FOR WIRE, patented April 7, 1953 by Sam Women Sam, Chicago, Ill.

A fine wire is provided having an abrasive cutting surface in which fine metal wire is uniformly closely helically wound with a filament of abrasive siliceous material of a diameter as fine as practicable so as to be as sharp as possible, about one-ten-thousandth of an inch, and an electroplated metal coating is provided, strongly adherent to the wire and of a thickness intermediate between the radius and diameter of the siliceous filament, whereby the filament becomes rigidly and securely locked in stationary position on the surface of the wire.

★ ★ ★

No. 2,633,692, WIRE ROPE-MAKING MACHINE, patented April 7, 1953 by William T. MacCreadle, Lewisburg, Pa.

In this machine a number of wire strands are twisted into a cable, a die receives the cable, means is provided for rotating the die in a direction opposite to the direction of cabling twist of the strands and to simultaneously twist the cable in the direction of rotation of the die as it enters the latter, and means is also provided to draw the cable through the die.

★ ★ ★

No. 2,633,877, WIRE AND MACHINE FOR MAKING, patented April 7, 1953 by Raymond F. Stockton, Sunland, Calif., assignor to Ray F. Stockton Wire Products Co., Inc., Burbank, Calif., a corporation of California.

More specifically, this machine is for making wire lath and comprises two pairs of opposed meshing gears rotatable so that wires fed therebetween may be deformed thereby into laterally corrugated wire, the pairs of gears being out of step with each other so as to deliver corrugated strands longitudinally displaced with respect to each other, whereupon the corrugated wire strands are guided as they issue from between their respective pairs of gears to cause them to assume a partially overlapping relation with respect to each other, and spot welded at the contracting portions of the overlapped strands.

★ ★ ★

No. 2,634,030, GARMENT HANGER SLEEVE HOLDER, patented April 7, 1953 by James M. Hershberger, Hillsboro, Ind.

The hanger is composed of a pair of resilient wire strands.

★ ★ ★

No. 2,634,070, CHRISTMAS TREE HOLDER, patented April 7, 1953 by Flory G. Aguettaz, Butte, Mont.

This holder is constructed of stout wire strands adapted to grip the tree at different spaced-apart locations longitudinally of its lower end portion.

★ ★ ★

No. 2,634,539, DEVICE FOR RETRIEVING SPINNERS OR THE LIKE, patented April 14, 1953 by Gerald O. Brown and Henry E. Durcholz, Denver, Colo.; Arlene Durcholz, administratrix of said Henry E. Durcholz, deceased, assignor to said Brown.

The device comprises a single length of wire. There are 4 claims.

★ ★ ★

No. 2,634,576, STAPLE FORMING MACHINE, patented April 14, 1953 by Peter E. Seibel, West Hempstead, N. Y., assignor of one-half to Abraham Borut, New York, N. Y.

There are six claims to this wire staple former.

★ ★ ★

No. 2,634,674, ROASTING RACK, patented April 14, 1953 by Sue Urth Irwin, Los Angeles, Calif.

The rack is constructed of wire lengths, including a spit.

★ ★ ★

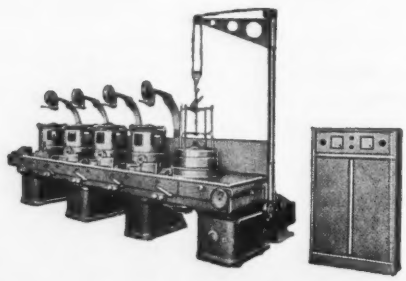
EW

Wire Drawing Machines, working on the dry or wet method (soap powder or by immersion) for iron, steel, copper, aluminum and other metal wires.

Metal Wire Cloth Weaving Looms (fly & mosquito nets, sieves, plastering work, etc.)

Automatic Straightening and Cutting Machines

Machines for producing: Wire nails and wire tacks, rivets, iron & wood screws, small nuts, welded and non-welded chains, knotted chains, barbed wire, wire pins, safety pins, hair clips, spokes and nipples for bicycles, etc.



EMILIO WARTENWEILER,

MILAN (Italy), Via Pergolesi, 18.

Tel. 21 245

No. 2,635,528, FRYING UTENSIL, patented April 21, 1953 by Victor P. Torres, San Gabriel, Calif.

This utensil is formed of wire, except for the outer end of the handle.

★ ★ ★

No. 2,635,738, METAL DRAWING APPARATUS, patented April 21, 1953 by William P. Avey, New Kensington, Howard H. Herrington, Pittsburgh, Lawrence W. Meyer, Schuylkill Haven, and Joseph E. McLaughlin, Pottsville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa., a corporation of Pennsylvania.

There are 7 claims to this apparatus for drawing tubes, bars and the like.

★ ★ ★

No. 2,636,168, FASTENER FORMING AND INSERTING MACHINE, patented April 28, 1953 by John G. Wright, Charles D. Toney, Charles A. Watkins, and Eugene Sudan, Atlanta, and William A. Maxwell, Duluth, Ga., assignors to The Auto-Soler Company, a corporation of Georgia.

The machine is adapted for forming a number of fasteners from a continuous length of wire.

★ ★ ★

No. 2,636,169, NAIL DISTRIBUTOR, patented April 28, 1953 by Wallace M. Cutler, Gloucester, Mass., Henry B. Greenough, deceased, late of Beverly, Mass., by Mary R. Greenough, administratrix, Beverly, Mass., and Edwin S. Kant, Melrose, Mass., assignors to United Shoe Machinery Corporation, Flemington, N. J., a corporation of New Jersey.

In this patent, the device is said to comprise a cylindrical nail roll having a longtiudinal series of pairs of parallel nail receiving passages which extend transversely through the roll, the passages of each of the pairs of passages being arranged in alinement circumferentially of the roll and being spaced equal distances at opposite sides respectively of a plane which extends longitudinally through the roll and includes a diameter of the roll.

★ ★ ★

No. 2,636,194, METHOD OF MAKING SELF-LOCKING SCREWS, patented April 28, 1953 by Andrew Schneider, Saginaw, Mich., assignor to Eaton Manufacturing Company, Cleveland, Ohio, a corporation of Ohio.

According to this patent the method comprises machining a screw blank with a shank having a pair of axially spaced like diameter solid portions connected by a reduced diameter solid portion, rolling external threads on the like diameter solid portions, said threads being of equal pitch diameter on both portions but having the lead on one portion offset to the lead on the other portion, and simultaneously machining the external surface of the reduced diameter portion of the shank to a taper and drilling a hole concentrically into a threaded section throughout the axial length thereof and into the reduced diameter portion internally of the taper to provide with the external taper machined surface a conical hollow wall section.

No. 2,635,258, BED SPRING MARGINAL RIM AND CONNECTIONS, patented April 21, 1953 by Edgar Anspacher, Beverly Hills, Calif.

Marginal hour-glass wire springs are retained in proper positions by the specific rim and connections provided.

★ ★ ★

No. 2,635,487, METHOD AND APPARATUS FOR MAKING WIRE DRAWING DIES, patented April 21, 1953 by Frank M. Potter and Robert M. Hartman, Rome, N. Y., assignors to General Cable Corporation, New York, N. Y., a corporation of New Jersey.

The method of producing a diamond wire die comprises encasing the diamond in a relatively short cylindrical body of metal which surrounds and firmly grips the entire surface of the diamond with the preferred die axis coincident with the longitudinal axis of the cylindrical body, opening opposite ends of the metal encasement to expose only small areas of the diamond at the two ends of the preferred die axis, drilling a small sharp cone on the preferred die axis in one of the exposed surfaces of the diamond, and subjecting the exposed surface of the diamond to an electric spark at the end of a needle electrode having its point accurately centered in the bottom of the cone, in an oxidizing atmosphere, the spark arcing across the gap from the end of the needle electrode to the surrounding edge of the metal encasement to drill an opening entirely through the diamond on the preferred die axis.

★ ★ ★

WAFIOS

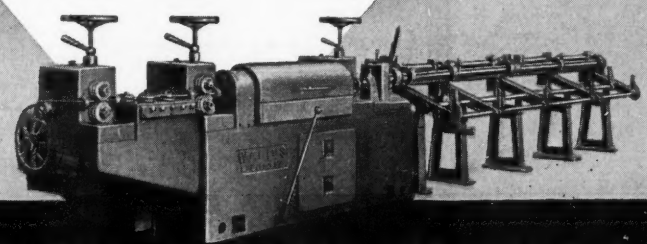
WIRE-WORKING MACHINERY

Wire Netting Machines for Chain Link, Hexagonal Mesh, Poultry Netting, Field Fence. Crimping, Barb Wire and Staple Machines. Spring Coilers. Spring End Grinding Automatics. Loop Benders. Upholstery Spring and Wire Mattress Machines. Wire Nail Machinery. Chain Formers. Chain Welders. Straightening and Cutting Machines. Multi-Slide Wire and Strip Forming Machines. Special Machinery for the making of Paper Clips, Lock Washers, Bale Ties, Key Rings, Tin Openers, Wire Bag Ties, etc. Automatics for Flexible Metallic Tubing.

Sole Agents for Australia and New Zealand: Bliss & Reels Co. Pty. Ltd., 64-66 Little Bourke Street, Melbourne C. 1, Australia.

WAFIOS

SINCE 1893



MASCHINENFABRIK WAFIOS

WAGNER, FICKER & SCHMID REUTLINGEN 3 / WÜRTT. GERMANY

No. 2,636,704, DETACHABLE HOSE SUPPORT, patented April 28, 1953 by Charles F. Norberg, Des Moines, Iowa.

This device comprises a springy rod bent into form to provide attaching arms and a clip.

New Wire Galvanizer

Morrison Industries, Inc., 17100 Miles Avenue, Cleveland 28, Ohio, has developed a medium sized machine for galvanizing wire nails that has all the features of larger machines. Production varies from 600 to 1000 pounds per hour depending upon requirements. The machine requires floor space about 10 feet square.

★ ★ ★

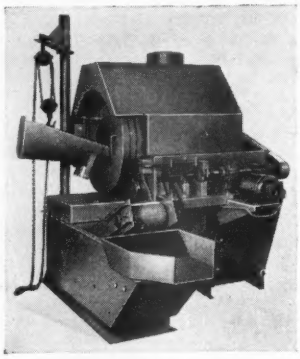
The operating cycle is simple. The main cylinder is charged with nails and zinc. Heat from the brick lined combustion chamber can be from either gas or oil fuel. When the load is galvanized the rotation of the cylinder is reversed and the nails are discharged through baffles into water. A mesh belt carries the nails to a drying pan which is heated to speed up the drying operation. As soon as the nails are dry they are kegged.

★ ★ ★

The drying and kegging operations take place while another charge of nails is being galvanized in the main cylinder. This machine is also ideal for bluing of nails and small parts.

★ ★ ★

Write the manufacturer for complete specifications.



Morrison Industry's Wire Galvanizer.

New Measuring Machine Embodies Novel Combination of Features

A great need has been felt in the electric cable making industry for a reliable machine capable of measuring cable with a high degree of accuracy. To-day when the industry is suffering from copper shortages and high raw material costs, the need becomes even more paramount and it is with this urgency in mind that Messrs. **B. & F. Carter & Co. Ltd.** of Albion Works, Bolton, England, have introduced their Patented "Exactor" measuring machine.

★ ★ ★

This machine is suitable for measuring all types of cable up to ½" diameter. (See page 607). It is arranged with a 1 yard circumference measuring wheel of special construction, mounted on ball bearings, making it possible to measure with consistent accuracy. To the periphery of the measuring wheel is bonded a layer of sponge rubber over which is stretched a

Proven by wide usage—greater efficiency in **Serving and Braiding** *when packages of* **Silk-Nylon-Acetate** *are the product of our Mills.*

Producers also of **Tracer and Marker Trams** *which meet the* **Underwriters' Laboratory** *specifications.*

Consult us on your specific problems.

Belding Heminway *"Over a Century of Leadership"*

Industrial Yarn Division **1407 Broadway, New York 18, N. Y.**

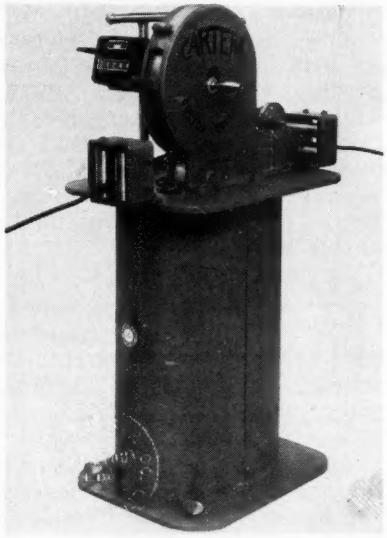
thin, hardened and tempered steel tyre. The result gives a resilient faced measuring wheel of correct circumference. When the material to be measured passes under the wheel, the weight of the wheel itself urges the material against the resilient periphery, affording an arcuate contact area instead of the normal point contact. The degree of accuracy is therefore increased owing to the reduced possibility of slip.

★ ★ ★

A special Albion revolution counter Type 12 is fitted to this machine, arranged with zero setback and numerals ½" in height so that the operator can clearly read the figures without the inconvenience of moving from the coiling station or other positions. This is a considerable advantage as much time can be lost by the operator where close scrutiny of the counter numerals is necessary, or where the cable has overrun its length and has to be drawn back. The counter is fitted with five figure wheels, the first of which records in 3" increments and the remaining four, in yards.

★ ★ ★

A straightening unit to remove serious undulations in the cable is fitted together with horizontal and vertical roller dies at the inlet and outlet positions. Both measuring and jockey wheels are fitted with scrapers to remove any compounding mixture which might adhere, thus ensuring a true measuring circumference.



Carter's "Exactor" Measuring Machine. *

★ ★ ★

The whole unit is mounted on a suitable streamline pedestal, of neat and pleasing appearance and although provision is made for floor fixing, it is of heavy fabricated steel design, making it quite stable for portable use.

★ ★ ★

Exhaustive tests have been made on this machine with electric cable of various diameter and surfaces, and the result has been far superior to those obtained on orthodox measurers. For example, 99 yards, 33 inches of 7/.064" diameter cable, ground measured was passed through the "Exactor" measuring machine seven times, at the rate of 300 feet per minute, with the following results:

M R+P
SINCE 1870
A New Universal Automatic Multi-Slide Bending Machine
suitable for the fully automatic, economical mass production of all types of components from wire and strip material.
Special Features:
• Vertical, enclosed construction, requiring the minimum of floor space.
• Positive and direct control of the bending slide, ensuring high output and trouble-free operation.
• Accurate material infeed by special gripping mechanism.
• Simple tooling, easily adjusted and changed.
• Additional slides for special shapes can be fitted.
• Extra attachments for piercing, blanking and embossing.
Our special leaflet giving details on the range of application of our automatic multi-slide bending machines is available on request.
MEYER, ROTH + PASTOR
MASCHINENFABRIK G. M. B. H.
KÖLN-RADERBERG / GERMANY

(a). One reading of 99 yards 33 inches.
(b). Two readings of 99 yards 34 inches.
(c). Three readings of 99 yards 35 inches.
(d). One reading of 99 yards 36 inches.

★ ★ ★

It will be noted from these figures that at least the results are consistent, proving that the margin or error has been reduced to a minimum not previously thought possible.

★ ★ ★

The manufacturers, realizing the importance of its function, have taken the utmost care in designing and assembling this machine and it can be recommended for any industry where length desired. Messrs. B. & F. Carter & Co. Ltd., would be very pleased to demonstrate this machine at their plant and measure any length of material that interested parties may wish to bring along. In addition, a full range of Albion industrial ratchet and revolution counters is illustrated in their leaflet No. 18/7 and this will be forwarded upon request together with any further information relating to the measuring machine which may be required.

M.I.T. Offers Summer Sessions

Two Special Summer Programs in Industrial Photoelasticity and Strain Gage Techniques will be given in the Laboratory for Experimental Stress Analysis in the Department of Mechanical Engineering during the 1953 Summer Session of the **Massachusetts Institute of Technology.**

★ ★ ★

The program in Industrial Photoelasticity, to be given from August 10 to 21, is designed primarily for the practicing engineer who has no previous knowledge of the subject. Emphasis will be placed on the applications of the method to industrial problems. A survey of the field of photoelasticity and its applications, together with a discussion of experimental techniques and equipment, will be included.

★ ★ ★

The program on Strain Gage Techniques will be given from August 24 to 28. It will include a survey of both theoretical and practical aspects, with emphasis on the application of strain gage techniques to the solution of industrial problems.

★ ★ ★

This will cover the basic theory of the wire resistance strain gage, interpretation of the observations, calculation of stresses from measured strains, considerations of electrical circuits, and certain aspects of the techniques of using strain gages both in the laboratory and in the field.

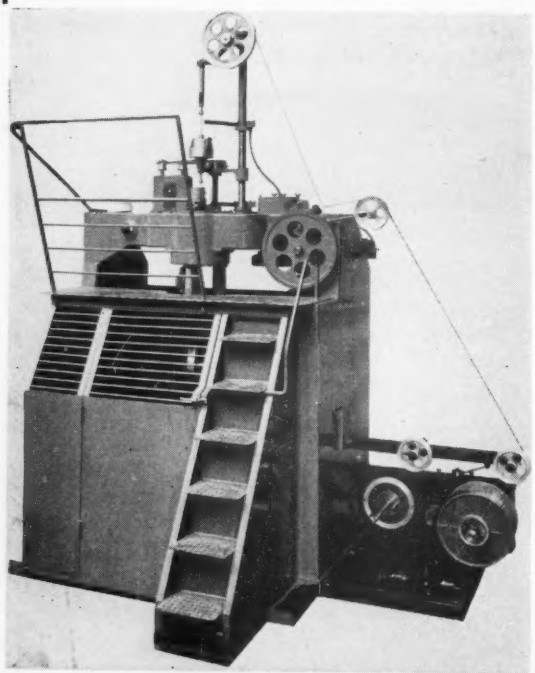
★ ★ ★

Laboratory periods and demonstrations will supplement the lecture material in both courses.

★ ★ ★

A New Machine . . .

THE POURTIER QUADDING MACHINE



- 2 lays per rotation of the flyer
- Special balancing capacity device
- Automatic stop motion in case of breakage of paper or cotton, on a predeterminated length
- Compensator device controlling the unrolling of the feed-drums and the equality of tension of the four ends
- Double take-up: compensator motion controlling the tension of the quad. Transversal movement of the reels instead of traverse
- Lays easy to reverse and to adjust
- Lockheed braked
- Automatic central lubrication
- Able to be used as a twinner
- Production: 500 lays per minute
- Feed-drums: maximum 16"
- Take-up reels: Maximum 18"
- Lays: from 1 to 7 lays per foot

POURTIER MACHINES

153, rue Gallieni, ROMAINVILLE (Seine) FRANCE

Further information and application blanks for the Special Summer Programs in Strain Gage Techniques and Industrial Photoelasticity, may be obtained from the Director of the Summer Session, Room 3-107, Massachusetts Institute of Technology, Cambridge 39.

★ ★ ★

Tramrail Cantilever Carrier Provides Handling Around Pillars

A new type overhead carrier with a cantilever arrangement that permits the unit to handle loads beyond the end of the crane on which the carrier operates has been developed by the **Cleveland Tramrail Division of The Cleveland Crane & Engineering Co.,** Wickliffe, Ohio.

★ ★ ★

The carrier was designed especially to take care of situations requiring the handling of materials in areas between roof-supporting pillars that cannot normally be covered by cranes, and, also, for reaching through doorways.

1500 lb. loads are easily handled beyond the end of a crane with this Cleveland Tramrail cantilever carrier. Where transfer cranes are employed, the carrier with its load can be transferred from one to the other. * * *

The extension feature of the carrier, illustrated, permits the hoist to reach out as much as 2′ - 1½″ beyond the end of the crane. When it is necessary to travel the crane for some distance on its runway, the carrier is moved from the crane end to permit safe clearance of the columns.

★ ★ ★

This unit has a capacity of 1500 lbs. Other cantilever carriers of different load capacities and reach can be made to suit conditions involved.

New Die Cutting Machine Introduced

A new machine for cutting rough cored nibs, re-cutting worn dies and removing rings has been introduced here from Sweden by the **Nord International Corporation,** Denville, N. J.

★ ★ ★

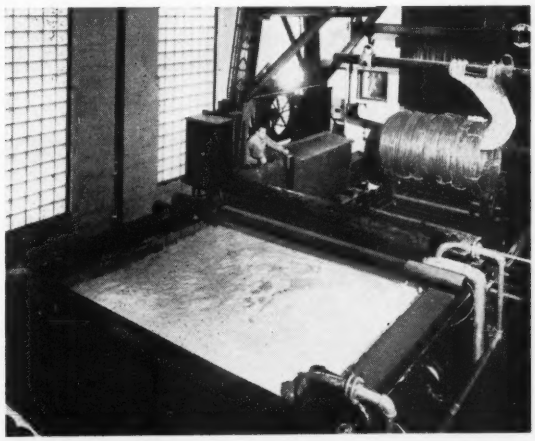
The machine, supplied in a kit that includes a buff rod, lapping buff, chuck fixture and sixteen diamond files of five types, is called the "Di-Profiler." The whole kit comes in a small wood case weighing about two pounds. Replacement files are readily available.

★ ★ ★

While round dies can be serviced, it is particularly valuable for shaped dies. Cutting is extremely rapid, with jobs that normally take

Use HEIL Steam Jet Agitators To INCREASE Your Pickling Tonnage...

A typical wire mill pickler completely outfitted with HEIL E-3 Type Steam Jet Agitators.



The majority of pickling operations throughout this country and Canada have selected Heil Steam Jet Agitators to increase pickling production at lower cost per ton. Violent agitation and proper heating of pickling solution in one simple operation will save valuable time and money.

1. LONGER SERVICE LIFE The combination of special lead alloy and patented nozzle provides rugged construction for longer service life. No breakage from thermal shock.
2. LOWER INITIAL COST Standard Pre-engineered units are available to meet your specific requirements. No down-time necessary for installation.

External Shell and Tube Exchangers available for continuous pickling.

3. CHOICE OF MATERIALS Standard units are available in either lead alloy for sulphuric acid or impervious graphite for muriatic and mixed acid solutions.
4. YOU SAVE ACID Uniform agitation at higher obtainable temperatures allows you to pickle at lower concentration and thus stretch your acid consumption.

Write for illustrated literature and Bulletin No. 43-W.

There are Over 267 Plants Using Heil Steam Jet Agitators
Representatives in all Principal Cities

YOUR SHIELD OF CORROSION-PROOF PROTECTION
LININGS TANKS HEATERS PLASTICS

HEIL PROCESS EQUIPMENT CORPORATION
12901 Elmwood Avenue • Cleveland 11, Ohio

Other Heil Products Include: Pickling Tanks • Lined Fume Removal Systems
Acid-Proof Maintenance Materials • Syphons • Lined Acid-Proof Piping

four to five hours done in one-half to three-quarters of an hour.

★ ★ ★

The Di-Profiler comes with or without a motor and flexible shaft drive, and a domestic make of this equipment can be supplied as an extra if desired.

★ ★ ★

Lapping and buffing can also be done with suitable accessories. It works on dead-end holes, in corners, follows shape contours and operates in other difficult and complex situations. The machine combines reciprocating, rotating and oscillating action.

★ ★ ★

The machine is not expected to replace standard die cutting and polishing equipment, but rather to supplement them. Many die rooms in this country are now using the device.

★ ★ ★

A circular describing and illustrating the little precision made machine, together with a price sheet, is available to interested readers.

New Insulating Varnish Booklet Available From Westinghouse

An 11-page booklet on baking and air drying types of Tuffernell® insulating varnishes is available from the **Westinghouse Electric Corporation.**

★ ★ ★

A three-phase research and testing program is presented followed by a section on the importance of viscosity control to the varnish user. Various graphs and a table are included in this section relating viscosity to penetration and thinner volumes required.

★ ★ ★

In addition to a description of the properties of each type of baking and air drying varnish, the booklet features a paragraph of applications for each insulating material.

Several pages are also devoted to the properties and applications of insulating and finishing enamels, insulating glues, paints, lacquers and thinners.

★ ★ ★

For a copy of this booklet, 65-120, write Westinghouse Electric Corporation, Box 2099, Pittsburgh 30, Pennsylvania.

Availability of Aluminum

Primary aluminum production in the United States has been and is expected to be:

1951—1,680,000,000 lbs.
1952—1,870,000,000 lbs.
1953—2,700,000,000 lbs. (estimated)
1954—3,400,000,000 lbs. (estimated)

★ ★ ★

Total aluminum available for manufacture, including primary, imports and secondary:

1952—2,400,000,000 lbs.
1953—3,500,000,000 lbs. (estimated)

Acropak Announces Complete Line of New Steel Spools

The Acrometal Products Company of Minneapolis, Minn., makers of the widely known **Acropak** aluminum spool for wire packaging and the largest manufacturer of its kind in the country, announces immediate availability of a complete line of steel shop-spools for heavy duty precision wire drawing.

★ ★ ★

The new line of steel spools was a natural development to meet the present day need in the wire industry for an exceptionally strong and rigid shop-spool to lick heavy duty processing problems.

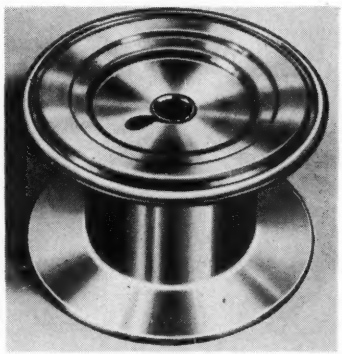
★ ★ ★

Fred Bieber, general manager of Acrometal Products, points out several outstanding features of these new steel spools. For example, there are no cracks or seams between head and barrel because the head is an integral part of the barrel. This eliminates any possibility for wire entrapment at this point.

★ ★ ★

Additionally, the new Acropak Steel spools are of welded construction to give superior strength and rigidity. A special welding technique developed in the Acrometal laboratory produces an exceptionally smooth weld without seams, cracks or rough surfaces. No chance for snags and snarls.

★ ★ ★



New Acropak Steel Spool. * * *

These steel spools are drawn from high quality steel alloys, scientifically heat treated, and copper plated to resist corrosion. Wire can be annealed directly on the spool. Great strength, and rigid end-plate construction holds flange toe-out to an absolute minimum. All spools are precision-built with tolerances no greater than plus or minus .005" — a feature absolutely essential for precision wire drawing.

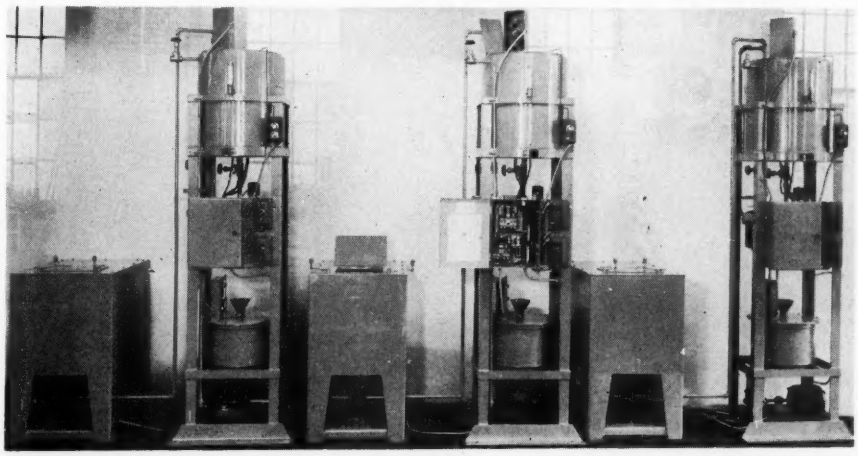
★ ★ ★

The complete line ranges in size from 2½" flange and 1¾" barrel to 12" flange with 6" barrel. For further information, write Acrometal Products, Inc., 616 North 5th Street, Minneapolis, Minn.

Handbook on Pickling

"Efficient Pickling with Rodine" is the title of a new publication recently issued by the **American Chemical Paint Company,** Ambler, Pennsylvania.

VARNISH CONDITIONING AND CIRCULATING OUTFITS #986



For use with wire enameling machines, using either synthetic or conventional enamels. Electric heated, with automatic temperature control.

Makers of wire insulating machines, wire tinners, enameling machines and other multiple wire processing equipment, using torque motors for adjustable winding tensions.

EST. 1855 AIMco INC. 1915

"American" AIM INSULATING MACHINERY COMPANY

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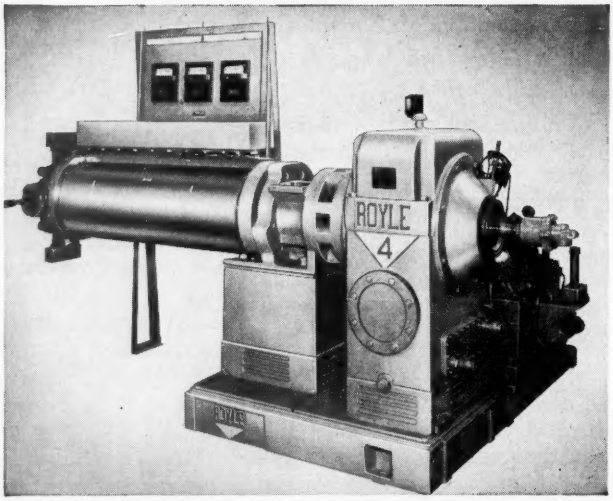
ROYLE
SPIROD* EXTRUDERS



Built by America's oldest builders of extruding machines Royle Spirod extruders are the result of more than seventy years experience in the design of extruding machines. Time tested and proven features are built into Royle Spirod extruders to assure maximum productivity at minimum operating cost. These features include: Heavy steel members without flanges . . . Spirally installed rod type heating elements to provide faster, steadier, more evenly distributed heat . . . Complete insulation of cylinder and head to reduce heat loss with substantial power savings . . . Separate heating zones controlled by proportioning instruments.

CHECK THESE FEATURES that assure profitable and trouble-free production of such items as plastic insulated wire, flexible and rigid pipe, plastic sheeting, plastic clothes line, to mention a few of the products that are produced daily with Royle Spirod extruders.

*Patent Applied for

JOHN ROYLE & SONS

ROYLE PATERSON N. J. 1880

PIONEERED THE CONTINUOUS EXTRUSION PROCESS IN

London, England — James Day (Machinery) Ltd. — REgent 2430
Home Office — V. M. Hovey J. W. VanRiper — SHerwood 2-8262
Akron, Ohio — J. C. Clinefelter — JEfferson 3264
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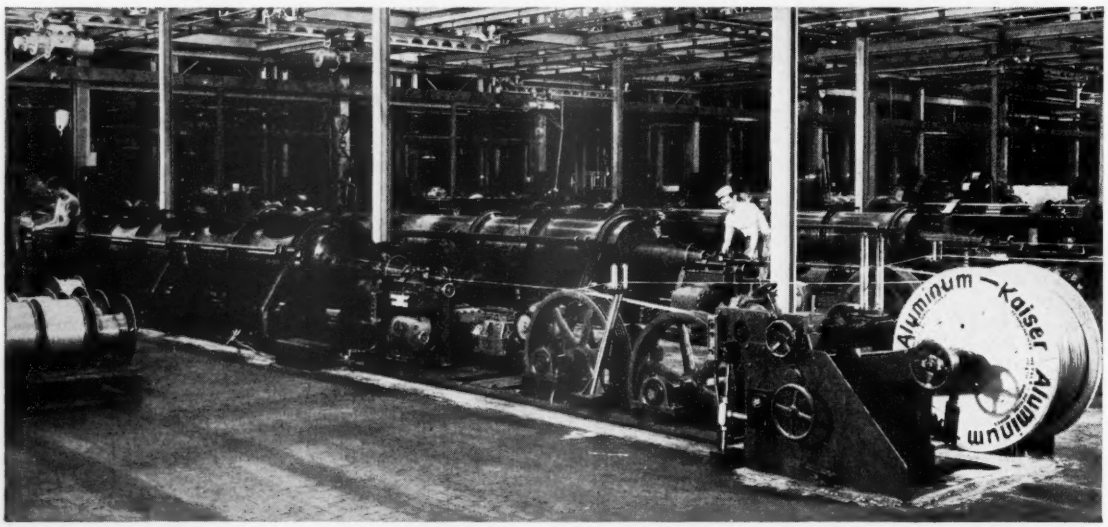
PATERSON 3, NEW JERSEY

NEW 22" SPOOL 750 RPM TUBULAR STRANDER

HYDRAULIC LIFT REEL STAND — INFINITELY VARIABLE TRAVERSE AIR CONTROLLED
DOUBLE DRUM HAUL-OFF WITH LINK BELT P.I.V. — AIR OPERATED BRAKING SYSTEM



HMT — ESTABLISHED 1846 — HUGHESVILLE MACHINE & TOOL COMPANY — WIRE & PROCESS MACHINERY

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Toronto, Ontario

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HUGHESVILLE, PA.
'Phone: 129-A

While called a bulletin, the publication is virtually a technical handbook on the subject of pickling with 80 pages of information on pickling practices and procedures for different forms and types of steel and its alloys.

★ ★ ★

Acids, processes, inhibitors and the various forms of oxides are discussed and illustrated with photographs, tables and graphs.

★ ★ ★

The handbook will be found to be a mine of authoritative information. Interested readers may secure a copy by requesting Bulletin No. 13.

Opens General Sales Office in Pittsburgh

The Ohio Iron and Steel Corporation has opened a new general sales office in the Oliver Building, Pittsburgh 22, Pa. This office will handle sales for the Industrial Fastener Division, the Pole Line Materials Division and The Berry Division, which manufactures hydraulic pumps and transmissions, machine tools, trailer trucks and special machinery.

Announces New Low-Cost Hoist

A new model Zip-Lift Electric Hoist with rope control to sell for only $199.50 is announced by the **Harnischfeger Corporation,** Milwaukee. The new hoist is actually a standard Zip-Lift designed to be operated with P&H's unique "One-Hand" Rope Control. It has all the features of the regular model.

★ ★ ★

The company stresses the fact that this hoist is guaranteed to operate continuously during intermittent usage for a period 25% longer than the rated time limit. The hoist is also designed with a weight-overload safety factor of five times the rated capacity.

★ ★ ★

As in all P&H Hoists, wire rope hoisting is used because of its wider range of side pull and greater safety from hidden wear. Other standard features are incorporated in its design, such as double

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ELECTRIC PRODUCTIMETERS
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Two Companion Counters . . . Two Sizes . . . Hi-Speed . . . Accurate . . . Long Life . . . Totally Enclosed

Speeds of 1000 counts per minute. Both counters give maximum readability. Design fits all mounting conditions . . . panel mounting or base mounting. Hardened steel working parts for long life and dependability.

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Write for "New Electrics" Bulletin

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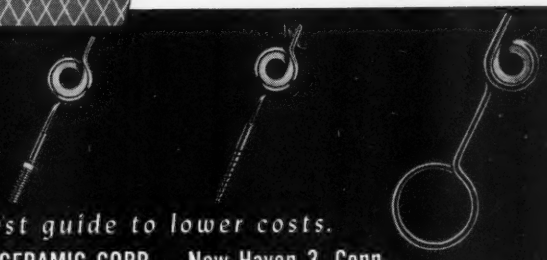
is the nearest material to a diamond in hardness — outwears other materials by 2 to 6 years — decreases downtime and permits higher production speeds. Send sample pigtail you're now using. We'll make a Heanium test sample adaptation for your particular application free of charge.

* *Pigtail covered by patent.*

Illustrated:
3 of the many Heanium Pigtail applications



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7 out of 9

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by elimination of high tin sludging due to incomplete reaction in feather tin method.

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brakes, oil bath lubrication, fully-enclosed construction, and grease-packed motor bearings. The hoist comes in two models with lifting capacities of 500 and 1000 pounds, with hoisting rates of 25 and 13 feet per minute. Both models are made for 12 ft. or 18 ft. lifts.

★ ★ ★

The new hoist is an addition to the present line and the popular push-button control models. A bulletin covering this hoist is now ready. Write Harnischfeger Corporation, 4400 W. National Ave., Milwaukee 46, Wis., for Bulletin H-29.

Moves Part of Staff to Ambridge

National Electric Products Corporation, early in April, transferred several of its departments from its Pittsburgh offices in the Chamber of Commerce Building to the Corporation's enlarged offices at its plant in Ambridge.

★ ★ ★

The departments, making the move, involving some sixty people, include Purchasing, Traffic, Service, Export and part of Accounting.

★ ★ ★

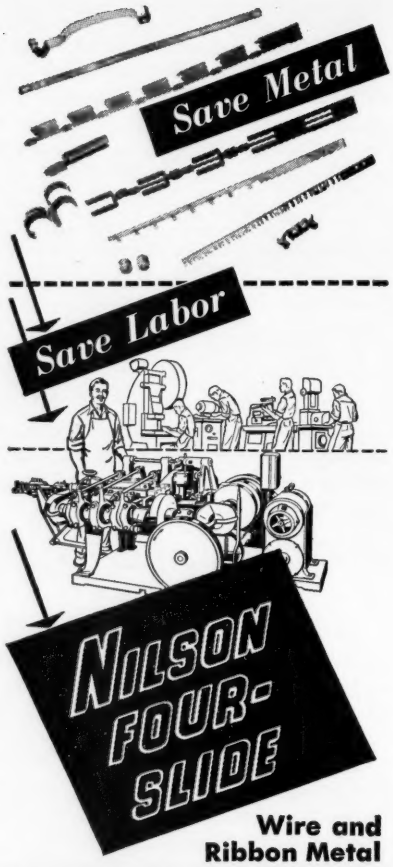
The move was made for closer liaison between production and service, as a part of the corporation's program for increased efficiency in the handling of its expanding business in electrical roughing-in materials, of which it is the nation's largest and oldest producer.

★ ★ ★

National Electric, which is observing its 48th year during 1953, will continue to maintain its executive offices on the 13th floor of the Chamber of Commerce Building where they have been located for the past seven years.

Electronic Adjustable-Speed Drive for Low Horsepower Applications

Designed to economically meet steadily increased needs for adjustable speeds in the lower horsepower ranges in the machine tool and metalworking industries, an improved, all-electric adjustable-



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FORMING MACHINES

Mounting production costs are driving firms out of the competitive picture. Too much scrap metal! Too many single operation machines! Too many operators! This whole picture can be changed to a highly profitable operation.

Install a NILSON combination press and 4-Slide forming machine. This machine takes wire or ribbon metal directly from the coil, straightens, feeds, pierces, blanks, swages, stamps, or coins, cuts off and forms . . . automatically in one quick precise operation. See the new picture? . . . Increased production! Minimum scrap metal! One machine for all operations! One operator!

For specific recommendations . . . send details of your operation.

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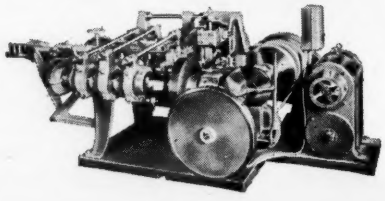

A NAME YOU CAN DEPEND ON!

In these days of highly complex cable coating requirements, a dependable source of supply is important!

That's why more and more U. S. wire manufacturers are turning to the firm that specializes in producing lacquers for the insulated wire industry—the New England Lacquer Company.

Our technical specialists are ready to work with you at any time—to help solve *your* lacquer problems. Write for details!

The above photograph is one of many contained in an eight-page brochure describing our facilities to serve you. Write for your copy of the complete brochure!

NEW ENGLAND LACQUER CO.

speed drive of from ¾ to 3-hp. is announced by the **Reliance Electric & Engineering Company,** 1088 Ivanhoe Rd., Cleveland 10, Ohio.

★ ★ ★

The new electronic-type variable-speed drive, called the "V*S, Jr.," is designed to take care of the growing number of production operations in machine tool and metalworking plants having these relatively low horsepower requirements.

★ ★ ★

First introduced in 1950 as a smaller, lower-cost version of the packaged Reliance V*S Drive, the new "junior" unit incorporates several design refinements. It is also now available in five sizes—¾, 1, 1½, 2, and 3-hp. ratings.

★ ★ ★

The new variable-speed drive, providing stepless adjustable speeds from A-c. circuits in the range of ¾ to 3-horsepower, is said to supply a cost-saving answer electrically to the problem of securing greater speed-changing flexibility, application versatility, and control convenience in the operation of a wide variety of machine tools and metalworking production units.

Adds New Plastic Tape to Line

A new vinyl plastic electrical tape has recently been added to the line of insulating tapes made by **United States Rubber Company.** The tape is being marketed under the brand name of "Royalastic" and is a plastic film about 6 mils (0.006″) thick. One side has a pressure sensitive adhesive that makes the over-all thickness about 7 mils.

★ ★ ★

The black tape has a tensile strength of 20 pounds per inch of width, excellent abrasion resistance, and good adhesion at low temperature. It has dielectric strength of approximately 10,000 volts.

★ ★ ★

The tape is not affected by sunlight, and it has no corrosive effect on electrical conductors. It has excellent resistance to water, acids, alkalies, oils, and aging (room tem-

H-D

BUNCHING (TWISTING) AND STRANDING IN THE WIRE AND GENERAL MANUFACTURING PROCESSES

SPECIALIZED ENGINEERING AND SPECIALIZED FACILITIES AT YOUR SERVICE

Expanding application of twisting principles to the production of many products is reflected by an ever-increasing demand for both H-D standard equipment as well as machines especially engineered to solve varied production problems. Week after week surprising new uses are developed through the close cooperation of our engineering department with manufacturers in many fields.

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NEW YORK 1, N. Y.

perature). Currently, the tape is available in 66- or 30-foot rolls ¾ of an inch wide, and in 10-foot rolls ½ an inch wide.

Bar, Pipe, and Rod Unit

Lyon Metal Products, Inc., Aurora, Ill., has introduced a storage rack especially designed to store bar, pipe and rods in straightened and cut lengths.

★ ★ ★

These steel units successfully solve unusual storage problems. They are easy to load and unload, and store lengthy material in a minimum of space.

★ ★ ★

They are available in double face models for center or open floor use, and single face models for use against a wall. They are finished in a green baked-on enamel.

New Plastic Anchors for Lag Screws

Two new plastic anchors designed for use with ⅜", 7/16" and ½" lag screws or corresponding wood screws have been announced by **Holub Industries, Inc.,** Sycamore, Illinois. They can be used in any material that can be drilled and will support expansion as covered in a data sheet that is available.

★ ★ ★

Underwriters' Laboratories, Inc. have granted these anchors their label for unlimited indoor and outdoor use. Testing laboratory pull-tests show a holding power of 2 tons in concrete.

★ ★ ★

These anchors are made of ethyl cellulose, a thermoplastic material well known for unusual dimensional stability; its ability to withstand extremes in temperature, age, moisture, corrosion, shock and vibration. Also, it possesses excellent dielectric qualities.

★ ★ ★

The design of these anchors provides two separate sections; one to receive the screw, the other to engage the wall of the drilled hole.

SIX ADVANTAGES from just ONE DIP!

COAT WITH
BORAX 5 MOL.

Here are the advantages you get when your stock is Borax-coated...

1. FASTER ACID NEUTRALIZING
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3. FASTER BUTT WELDING
4. BETTER WORKING CONDITIONS
5. LONGER STORAGE SAFETY
6. RUST DOES NOT FORM

One dip puts on a Borax coat that is tight, yet pliable, and dries in a few minutes. It provides a good vehicle for your drawing lubricant and won't flake off. Borax-coated rods are a lot cleaner to handle in transit and are protected from rust while in storage. Try BORAX or BORAX 5 MOL on *your* stock!

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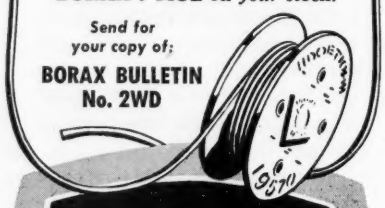

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As the screw is turned in, the anchor expands and the plastic material cold flows into every crevice of the drilled hole wall. A bonding and fusing action automatically takes place to provide a permanent trouble-free mounting.

Perfect Crystals May Produce Stronger Metals

Tiny but "perfect" crystals, produced in the **General Electric Research Laboratory,** may provide a clue to metals many times stronger than those now in use, a G-E metallurgist said.

★ ★ ★

Speaking before the Seventh Annual New England Regional Conference of the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers, **Dr. J. Herbert Hollomon,** manager of the metallurgical research department of the G-E research laboratory, told of the work of two G-E scientists in making microscopic crystals of zinc, zinc sulfide and mercury without the defects which are usually present.

★ ★ ★

X-ray tests, as well as photographs made at high magnification, show them to be virtually perfect crystals. From the amount which they may be bent and still spring back, it is possible to measure the stresses to which they are subjected. This shows them to be far stronger than ordinary crystals.

★ ★ ★

Dr. Hollomon said that work on defects in crystals is now assuming great importance in the laboratory. Metals, as used ordinarily, consist of crystals, and there are usually defects in the regular arrangement of the atoms of which they are built. If such defects can be eliminated, theory indicates that metal strength might be increased as much as a thousand times.

★ ★ ★

The G-E metallurgy research department is engaged in a broad program of research in this field, to find out why metals both in pure form and alloyed with other

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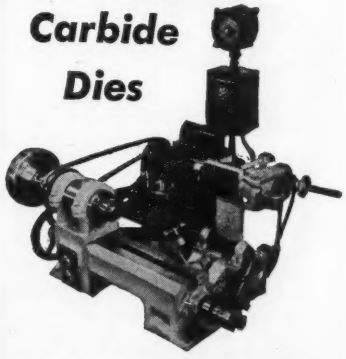

* Statement from actual user by one of America's largest Tungsten Carbide Die Makers.

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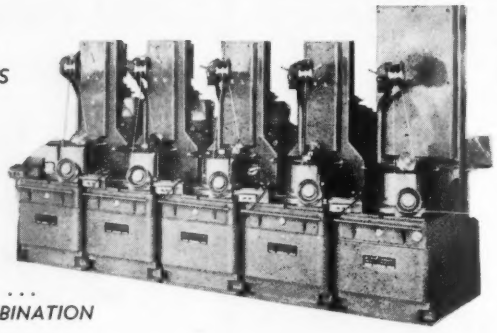

WET OR DRY LUBRICANTS

SINGLE UNIT ... OR ANY COMBINATION

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Wire Baking is a MUST when you use this new IMPROVED LOW COST FLASH BAKER

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SMALLER — SIMPLIFIED — MORE COMPACT — LOWER COST FLASH BAKER — Can be installed without pit.

FASTER BAKING—due to increased air velocity and reduction in waste space in baking chamber.

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LESS MAINTENANCE — new ram-jet type burner equipment replaces old style brick combustion chamber with its inherent troublesome features.

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metals behave as they do. In connection with these studies **Dr. Walter Roth** and **Dr. W. W. Piper** produced the crystals without defects. Their work confirmed earlier work at the Bell Telephone Laboratories where similar crystals of cadmium and tin had been made, Dr. Hollomon explained. **Dr. Gerald Sears,** in the General Electric Research Laboratory, has grown similar fine fibers of mercury and zinc.

★ ★ ★

He also told of work in crystal growth, which has been found to take place in a helical direction, similar to that of a so-called "spiral" staircase. When a crystal forms, successive layers of atoms are built up. It had been a puzzle, he said, as to how, when one layer had been laid down, the crystal was able to start another. Now it turns out that a layer is ordinarily never entirely completed, but advances in a spiral, continually getting higher. Studies in the G-E research laboratory have fully confirmed this discovery, said Dr. Hollomon.

Wire Concern Under New Ownership

The Cavert Wire Company, Ellwood City, Pennsylvania, manufacturers of steel wire bale ties, cross-head and single loop, spooled wire for automatic balers and annealed steel baling wire, has been taken over by new owners. The new principals are **Meyer L. Swimmer** and his son, **Wolford Swimmer,** of Uniontown, Pennsylvania.

★ ★ ★

Meyer Swimmer will serve as President while his son will act as General Manager. The Swimmers are familiar with the wire business, having operated a steel wire hanger plant in Uniontown for a number of years.

★ ★ ★

The new owners have announced they will continue to give Cavert customers the same fine quality products and service to which they have become accustomed for a half century.

★ ★ ★

Currently the Cavert firm is selling most of its products in the agricultural and industrial markets. However, the new owners intend to seek other markets for existing products and plan to develop and produce new wire products in the near future.

History of Wire Cloth Cited in Article

York County's New York Wire Cloth Company played an important part in the early development of the wire screen and wire cloth industry. While there have been many changes made in production techniques, this old Pennsylvania company is still a leader in the industry, according to an article featured in the April issue of the Kaiser Aluminum News, published by Kaiser Aluminum & Chemical Corporation, Oakland, California.

J. & L. Using Plastic Cores in Wire Rope

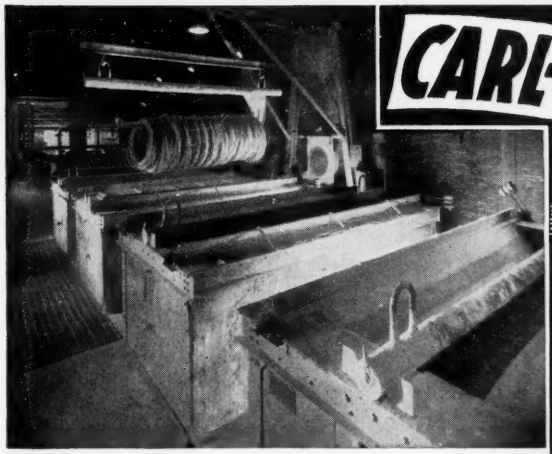
Jones and Laughlin Steel Corporation has announced the successful development of a plastic core to replace hemp at their Wire Rope Division in Muncy, Pa. About 50% of their production will soon contain the new core, the result of six years of development work.

★ ★ ★

The company had been using about 70,000 pounds of hemp per month for cores. Should the industry generally adopt the plastic core, it would take 9000 tons monthly to meet the demand. This is not to imply that all wire rope will utilize the plastic, as around half of the rope production will normally contain steel cores.

★ ★ ★

The polyvinyl chloride cores are said to have many advantages. Chief among them is that the plastic is unaffected by acid, caustics and other substances that attack hemp. Uniform strength, non-absorption of water and increased joint strength are also said to result from the use of the plastic cores.



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a dependable rust preventative from a reliable source.

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VINYLS for...

CRITICAL CUSTOMERS

For the past ten years we have specialized in the compounding of Vinyl extrusion and injection molding compounds to specifications, or developing compounds for a specific use.

Underwriters' approved standard compounds are available in all colors for POT, T, TW, 80 Degree C, 90 Degree C and 105 Degree C wires.

Save your plant space for wire processing equipment. Let us tailor your compounds to bring out the special properties you require.

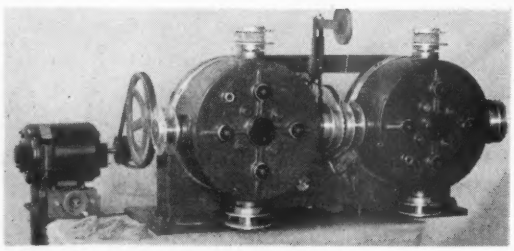
Your inquiries are invited.

ELECTRONIC RUBBER COMPANY

69 Sunnyside Ave. • Stamford, Conn.

BOYD CONTINUOUS COIL WINDER #3130

Semi-Automatic



Winds short coils (25' to 200') continuously. Traverse wire with layer wind. When proper length is wound, guide is forced by solenoid action to opposing spindle turning at same speed. When sufficient turns are wound on second spindle—a knife jumps between heads and cuts wire connecting the two coils. The head with the full coil indexes upward and an empty coil comes into winding position. Operator then easily removes full coil and ties it as desired. Works particularly well with bell and stove pipe wire. Can be speeded for long coils—slowed for shorter. ½H.P. motor provides ample power. Operator requires no training, skill or experience.

BOYD & SONS MANUFACTURING CORP. 1434-38 Callowhill St. Philadelphia 30, Pa.

Bulletin Describes New Variable Speed Drive

Reeves Pulley Company, Columbus, Indiana, has issued a new bulletin, V-532, describing the new Reeves Flexi-Speed Drive, the latest addition to the Reeves line of variable speed drives and controls.

★ ★ ★

In addition to showing the flexibility in mounting by means of photographs, the bulletin describes the unit in some detail, gives rating tables, shaft center distances, ordering instructions, and complete dimensions.

★ ★ ★

Copies are available upon request to the company.

Davis-Standard Sales Corporation to Market for Standard Machinery Company

Beginning June 1st, the newly formed **Davis-Standard Sales Corporation,** Mystic, Connecticut, will assume the exclusive marketing of Davis-Standard Extruders and Standard Molding Presses. Both the presses and the extruding machines are manufactured by **The Standard Machinery Company** of Mystic.

★ ★ ★

Standard Machinery, a 105 year old company, first began making molding presses in 1936, and today there are more than 1500 compression and transfer presses in service throughout this country and abroad. More recently they have added their line of Davis-Standard extruding machines which are now in use with many of the major wire and cable companies.

★ ★ ★

Standard Molding Presses were formerly sold through the F. J. Stokes Company of Philadelphia under the name of Stokes Standard Molding Presses. These presses and parts will now be available directly from The Standard Machinery Company through Davis-Standard Sales Corporation.

★ ★ ★

Under the new marketing man-

agement, Davis-Standard Sales Corporation will assist molding and extruding companies to achieve the best possible production, with the problems of users receiving first-hand attention from company engineers.

New Wire and Cable Catalog Issued

The electrical wire and cable department of **United States Rubber Company** has published a new 76-page booklet entitled "U. S. Electrical Wires and Cables for the Chemical and Petroleum Industries".

★ ★ ★

Divided into four main sections: Insulation Compounds; Jacket Compounds; Constructions; and Technical Data, the booklet follows the successful pattern of U. S. Rubber's earlier book on the coal mining industry.

★ ★ ★

The compound sections have been expanded to include butyl insulation, heat and moisture-resistant insulations, thermoplastic types, the general-purpose neoprene jacket, and the polyvinyl chloride type jacket.

★ ★ ★

Copies may be obtained by writing the Electrical Wire and Cable Department, United States Rubber Company, 1230 Avenue of the Americas, New York 20.

National Electric Products Moves Executive Office

Executive offices of **National Electric Products Corporation,** the nation's largest manufacturer of electrical roughing-in materials, together with the sales and several other departments, were moved to the ninth floor at 140 Stanwix Street, Gateway Center, Pittsburgh, Pa., on May 4, it was announced by W. C. Robinson, Sr., President of the corporation. The offices which the corporation has occupied in the Chamber of Commerce Building for the past seven years, were vacated over the weekend May 1 to 3.

★ ★ ★

High Quality

COPPER and BRONZE WIRE

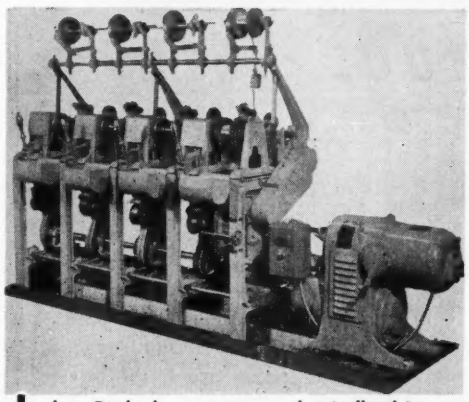
High Carbon and Low Carbon

Specialty Steel Wire

Spencer wire corporation

★ 555 LEHIGH AVENUE, UNION, N. J.

Plants at Union, N.J., Hillside, N.J., West Brookfield, Mass.



1900-HV MULTIPLE SPINDLE SPOOLER

SPECIFICATIONS
Size Range: .010" to .080" or heavier if soft and many flat wire sizes.
Max. Spool Size: 16" flange diameter.
Capacity: usually 4 to 8 spindles.

The 1900-HV Spooler is a rigid, precision machine which will consistently produce a uniform, dense wire lay. Both the traverse and spindle drives are regulated through wide-range, stepless, variable speed units, eliminating change gears. The 1900-HV is completely adaptable to your particular constant or changing demands. All controls are positive. Adjustments are made accurately with the spooler in operation and without tools.

Both smooth acceleration and rapid stopping is obtained through a single lever at each station. Spool changing is simple and rapid. Anti-friction bearings are used on all shafting and spindles.

Your special requirements can be incorporated into the design. Each machine is delivered ready for operation from your power supply. Payoff stands furnished as extras.

Consult us on your spooling problems.

ROBERT J. EMORY COMPANY

31 East Runyon Street Newark 5, N. J.

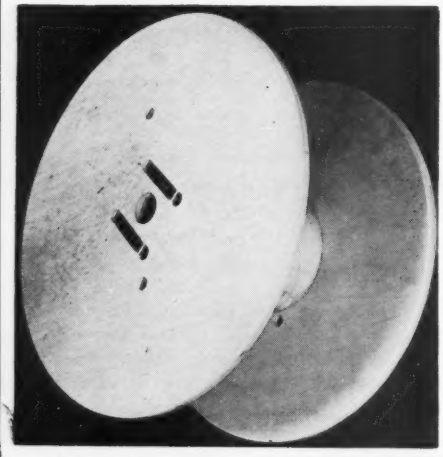
NORBIDE®
Abrasive
The Hardest Manufactured Abrasive for Cutting and Polishing Dies

In the cutting and polishing of wire drawing dies, sizes 220 and 240 are used for ripping, and 320F for semi-polishing. Norbide Abrasive costs 1/100th to 1/150th as much as diamond powder and therefore does not have to be applied so sparingly.

NORTON COMPANY
WORCESTER 6
MASSACHUSETTS

NORTON *Making better products to make other products better*

FINE PLYWOOD REELS
FOR WIRE



Made of air-dried wood, all parts secured with metal strapping. This reel is durable and strong. Heads cannot be dislodged by heavy side load pressures.
Reels shipped knocked down or assembled — metal strapping easily applied by standard metal fastening clips used for boxes, etc.
Heads have accurately fitted dovetail joints that give the reel extreme rigidity. Returnable and non-returnable types, made in head diameters of 6 in. to 22 in.

Shipped to any point in New England by truck
Get the facts on these fine reels

WINCHESTER REEL COMPANY, Inc.
ASHUELOT, N. H. **TEL.: WINCHESTER 163-2**
Our Products Carry Reel Loads.

Earlier, in April, Purchasing Traffic, Service, Export and part of the Accounting Departments and personnel were removed from the Chamber of Commerce Building to the Corporation's increased office facilities at its parent plant in Ambridge.

Artys Renews Contract With Mettler

S. Straus, President of **Artys Sales Company,** Eleven Broadway, New York 4, New York, has announced a renewal of their contract, by which they will serve as representatives for the sale of Shuster Automatic Wire Straightening and Cutting Machines in the New York and New Jersey areas. The Shuster line, famous the world over in the metal trades for over 80 years, is manufactured by **Mettler Machine Tool, Inc.,** of New Haven, Conn.

★ ★ ★

Following the plan that led to the increased demand and popularity of Shuster Machines in their territory the New York and New Jersey areas through Artys Sales Company for the past three years, Shuster Wire Straightening and Cutting Machines will be sold similarly by other representatives of Mettler Machine Tool, Inc. in all other major areas in the U. S. A. Sales promotions by local representatives will be supported heavily by company advertising in industrial and metal trade papers.

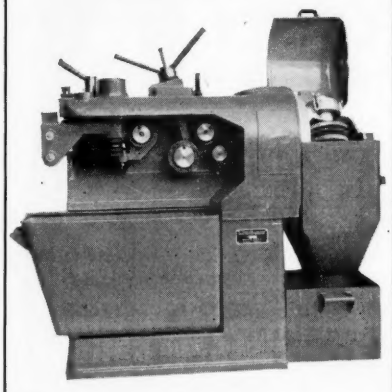
New Trade Names Index

The Industrial Diamond Information Bureau, 32 Holborn Viaduct, London E.C. 1, has announced the publication of the 1953 edition of its "Industrial Diamond Trade Names Index and Yearbook," which has been completely revised jointly by the Bureau and the Industrial Diamond Review.

★ ★ ★

The booklet lists approximately 1900 trade names of manufacturers of diamond tools, abrasives, diamond and carbide wire drawing dies and so forth. It sells for 3s. 6d. and may be purchased from the Bureau.

LINÉ-GORCY
MECHANICAL
WIRE ROD DESCALERS
(Patented in U.S.A.)



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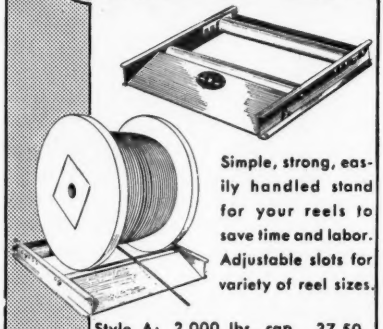
SOLE AMERICAN DISTRIBUTORS
122 East 42nd Street
New York 17, N. Y.
Telephone: OXford 7-3294

Time to Discard
OLD-FASHIONED WAYS

Jacks . . props . . shores . . horses . . why fool with these obsolete methods of handling reels? DO IT THE MODERN, EFFICIENT WAY! Reel or unreel wire, cable, rope with

ROLL-A-REEL



Simple, strong, easily handled stand for your reels to save time and labor. Adjustable slots for variety of reel sizes.

Style A: 2,000 lbs. cap. 37.50
Style B: 4,000 lbs. cap. 75.00
f.o.b. Cincinnati

WRITE FOR DETAILS TODAY

ROLL-A-REEL
327 WEST FOURTH STREET
CINCINNATI 2, OHIO

History and Growth of Continental Steel Corporation

A booklet, "Continental Steel—Its Origin and History," has been issued by **The Continental Steel Corporation,** Kokomo, Indiana, that traces the history of the various companies that now comprise their present holdings. By means of illustrations and text, their various operations are depicted. A financial statement is included, together with a table running from 1927 through 1951 which shows interestingly the steady growth through the 25 year period.

★ ★ ★

Persons interested in receiving copies of the booklet may write to the company for them.

New Copper Wire Buncher Announced by Cook

The Cook Manufacturing Company, 265 North 9th St., Paterson 2, N. J., builders of wire processing and fabricating machinery, has announced that it has succeeded in producing a completely new and highly versatile bunching machine that is capable of stranding any number of wires with perfect concentricity.

★ ★ ★

The machine operates at high speed, forming 1400 twists per minute. This buncher has formed bunched strands of 7, 10, 16, 19, 41 and 65 with such concentricity as to enable its passage through an extruding die with one mil clearance.

★ ★ ★

Rope stranding has also been done on this buncher, a strand of 7 x 7/30 wires formed at a speed of 7000 feet per hour.

★ ★ ★

Information on the new buncher will be sent to interested persons upon request.

Bulletin on Lubricants

Magnus Chemical Company, Garwood, N. J., recently issued Bulletin No. 132, entitled "Lubricants for Wire, Shape and Tube Drawing."

★ ★ ★

Starting with a general discus-

FOR TOUGH, STRONG
PLYWOOD
REELS & SPOOLS
FOR WIRE, ROPE and PLASTICS
use those made by the largest plywood reel manufacturer in America.
Get our prices today.

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CO., INC.
P. O. Box 402 Pawtucket, R. I.
Telephone: PA 2-1300

Warner
BELL-MINE
LIME
for
WIRE DRAWING

WARNER COMPANY
BELLEFONTE DIVISION
BELLEFONTE, PA.
Sales Office
Philadelphia—Pittsburgh—New York

Top quality non-returnable spools . . . available in standard head and barrel sizes.

Write for a quotation today!

MASON CAN COMPANY
1949 Dexter Rd., East Providence 14, R. I.
MASON CAN COMPANY OF OHIO
Greenville, Ohio

sion on the function of lubricants in drawing, there follows a list of 20 lubricants, with descriptions and the types of metals to which each is best adapted. Both wet and dry lubricants are covered. On the back page a chart summarizes the contents for ready reference purposes.

★ ★ ★

For a copy of this useful bulletin, please write to the Lubricants Division of the company.

The Trenton Regional Meeting

(*Continued from page 577*)

address of welcome to the assemblage. Those who were there will understand this apparently contradictory description of his talk —a bit of humor, a few stories and some heart-warming words of welcome.

★ ★ ★

Now Available to the WIRE & CABLE MANUFACTURER

FLAMMABILITY TESTER

Flammability Tester Model FT-11

to flame-check cable against Navy Spec. Mil-915-C (Ships)

also

HIGH-POT SETS

VELOCITY-OF-PROPAGATION METERS

Write for Prices and Other Information

Special Electronic Wire and Cable Test Equipment Designed and Built to Specifications

MANSON LABORATORIES
207 Greenwich Avenue • Stamford, Conn.

Industrial Control Devices — Electronic and Electro-Mechanical Instruments

MILTON MACHINE

RUGGED in design . . . DEPENDABLE in service!

Save on replacement and maintenance!

RUGGED STEEL HEAVY DUTY PROCESSING REELS

Having trouble with light weight reels failing in heavy duty service? Send us a sketch or print stating the limiting dimensions and service required, we'll be glad to tell you about our facilities for supplying the wire rope and cable industry with special heavy duty processing reels, spools or bobbins. WRITE FOR BULLETIN 52-W.

MILTON MACHINE WORKS, Inc.
DESIGNERS – ENGINEERS – MANUFACTURERS
MILTON • PENNA.

HKP
PORTER
HANDKLIP
6C WIRE CUTTER

For FREE CUTTING of wires, cable, rods, baling wire and bolts up to medium hardness.

One of the handiest, most useful cutters ever made. Parrot-beak jaw quickly locates material for easy cutting. Protruding tip of jaw prevents wire from slipping, aids in stretching wire and is great for pulling out staples.

Essential equipment for cutting high tensile communication and power wires used in rural electrification (Model 6B with special hard cutting edges). See your supplier.

H. K. PORTER, INC.
Somerville 43, Mass.
Porter Cutters Porter Pruners
PORTER-FERGUSON Autobody and Fender Repair Tools

Mr. Seymour then introduced Frederick A. French, Chief Plant Engineer for Roebling, who told the group how pleased he and his company were to have this meeting here and to have an opportunity to open their plant the following day to them. He explained that the region was first settled in 1677 by one Mahlon Stacy, who set up a grist mill there. In 1714 his son sold a tract of land to a William Trent, which led to the founding of Trenton. From these two pioneer residents the hotel derives its name. The first steel mill, he said, was the Cooper Iron Works, established in Trenton in 1845. This became the nucleus of the great American Steel and Wire empire in 1913. In 1841 the Roebling business was started, making steel hawsers to replace the hemp ropes used in towing canal boats. He moved to Trenton in 1847 to be nearer his source of wire supply. A little later, he started his own wire plant at Roebling, N. J. The big Roebling mills have not been open to such inspection trips here-

YARNS

For electric wire. Acetate, nylon and silk, natural or dyed. Put up on braider tubes, spools or cops.

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METAL BOUND RETURNABLE REELS

Made in 12" to 24" diameters.

No nails used. *All glued construction.* Made of kiln-dried wood. Special design prevents breaking or splintering of wood, protecting insulated wire from damage.

Write for details

WILLIAM McCASKIE, INC.
FORGE ROAD • WESTPORT • MASS.
Tel.: 145 Est. 1903

tofore, but with the purchase of the business by the Colorado Fuel and Iron Corporation on the first of this year, the policy had been altered, making possible tour of the mills on the morrow.

★ ★ ★

The principal speaker of the evening, next introduced by Mr. Seymour, was Professor John Tukevich, Assistant Professor of Chemistry at Princeton University. Professor Tukevich is a graduate of Dartmouth and Princeton Universities and holds degrees resulting from further studies in England and Germany. His talk was on analytical and synthetic chemistry, his points being illustrated by simple experiments. He stressed the fact that synthetic or creative chemistry is the branch from which new products, new cures for disease and better living standards arise. When the chemistry of the human body is better understood, as an example, the professor felt that human life might well be prolonged indefinitely. This he explained in some detail.

Plant Inspection Tours

Busses started to load at nine on Friday morning for two tours, the ferrous men going to the Roebling Works of John A. Roebling's Sons Corporation at Roebling, N. J. and those interested in nonferrous production going to the mill of the Crescent Insulated Wire and Cable Company in Trenton, where both wire drawing and the manufacture of insulated wire was observed. Both plant inspection trips were very worth while. One of the points of exceptional interest at Crescent was a new combination drawing machine and Syncro-Cook resistance annealer, with which was coupled a "Syncromatic" take-up. This is a new continuous mechanism with two reels—when one reel is loaded, wire is transferred automatically to the other empty reel, so that rod can be fed into a drawing machine, drawn to intermediate size, annealed and spooled all day long without a stop.

★ ★ ★

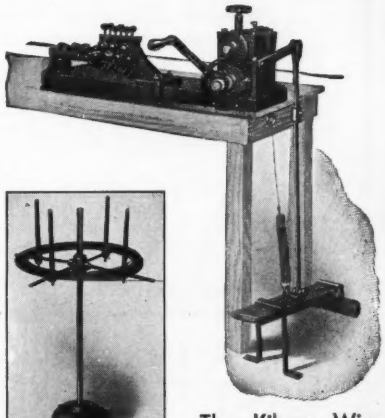
Vapor - from - Paper
STOPS RUST

Now wire is being protected in storage and in shipment without oil or grease. VPI vapor permeates area within carton. Makes air and moisture harmless to shiny wire surfaces. For "VPI Facts", write: Angier Corporation, Framingham 3, Mass.

ANGIER VPI* WRAP

*Reg. U.S. Pat. Off. Vapor Rust Preventive

WIRE STRAIGHTENER



The Kilmer Wire straightening and cutting machine is hand operated and recommended for wire No. 8 to No. 19 gauge.
Wire Reel will handle coils up to 150 lbs. with I.D. adjustments from 7" to 22" and 30" O.D.

M. D. KILMER & COMPANY
4840 BROOKPARK RD.
CLEVELAND 9, OHIO

REELS **SPOOLS**

ALL SIZES

WOOD - PLYWOOD - WOOD - METAL

RETURNABLE NON-RETURNABLE

Samples and Prices on Request

DURKEE MFG. CO. **PINE RIVER, MINN.**

Cut Your Product Cost . . .

Stop struggling with wire worries. There's a Continental wire to help cut products costs — to add sales appeal. Let us know about your problem . . . Let Continental's helpful wire service work for you.

CONTINENTAL STEEL CORP. STEEL CONTINENTAL WIRE KOKOMO, IND.

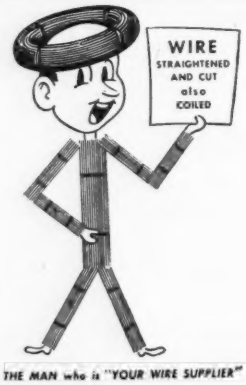
*Trade Mark Reg. U. S. Pat. Off.

CONTINENTAL STEEL

CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF Manufacturer's Wire in many sizes, shapes, tempers and finishes, including Galvanized. KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, Lead Coated, and special wire. ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.



THE MAN who is "YOUR WIRE SUPPLIER"

WIRE STRAIGHTENED AND CUT TO LENGTH

From 18 gauge up to 5/8" diam.

WE WILL FURNISH THE WIRE or STRAIGHTEN and CUT YOUR STOCK.

"Straight as an Arrow"

Telephone: ERIE 4-7139

ERIE IRON & SUPPLY CORPORATION

1059 EAST BUFFALO ROAD, ERIE, PENNA.

THE BETTER YOUR WIRE . . .

THE BETTER YOUR PRODUCT!

Choose *Cortland* GALVANIZED WIRE

Fine products are made from fine-quality materials. That's why so many fabricators and formers select Cortland Brand specialized low carbon wires. Cortland Brand wires are among the finest available . . . made from the best corrosion-resisting, open-hearth steel in Wickwire's own mills. Use them for your products . . . in any of the following types, sizes and finishes.

Cortland Brand

SIZE: coils, spools or straightened cut to length.

FINISH: plain, galvanized, coppered or tinned.

TYPE: stone wire, bookbinder, flat, etc.

WICKWIRE BROTHERS, INC. **CORTLAND, N.Y.**

BETTER!

OUR EXCLUSIVE PROCESS

for

DIAMOND POWDER RECLAMATION

Will recover for you a higher percentage from used diamond powders, wheels, etc.

Your old cotton, die washings, worn wheels, sludge, etc., have great value.

With our process you can be assured of

MAXIMUM RECOVERY

Send us your waste diamond materials

We are also now supplying a complete line of top-quality

DIAMOND GRINDING WHEELS

Write for prices

NATIONAL RESEARCH COMPANY

25530 Little Mack Ave.

St. Claire Shores, Mich.

Following the morning tours, in the afternoon over 100 men went to see the Roebling copper wire mill in Roebling and Roebling's Hawthorn Works in Trenton, at which insulated wire and cable is fabricated.

★ ★ ★

Those taking the tours were treated to a fine home-cooked luncheon at Legion Hall and at the Methodist Church in Roebling, where the good ladies of the Guild provided tasty food in great variety and abundance.

★ ★ ★

During the morning, at ten o'clock the ladies who had come to Trenton for the occasion, were taken on an historical tour of the city and vicinity, that included a visit to the British Barracks, to the Battle Monument, to the Trent House, to Pennsbury Manor (Wil-

liam Penn's former home) and to Washington Crossing Park. The trip wound up with a luncheon at Bucks County's Bohemian Village in New Hope, Pa., a short distance north of Washington's Crossing. They were returned safely to the hotel about mid-afternoon, after which everybody was concerned with catching trains or getting cars out of the garages for the trip home.

★ ★ ★

All credit for this highly successful meeting is due to the hard-working Program Committee, which consisted of C. J. Murray, Jr., Vice President of Crescent Insulated Wire and Cable Company; R. H. Saviers, Works Metallurgist, American Steel and Wire Division of United States Steel Corporation; R. S. Worth, Manufacturing Manager of John A. Roebling's Sons Corporation; G. A. Stone of the Wire Equipment Manufacturing Corporation; and Leroy D. Seymour, who served as Chairman of the Committee.

★ ★ ★

Many nice things were heard about the lobby regarding the meeting and much satisfaction expressed as to the fine caliber of the whole program. Although a regional meeting, many men had come from long distances to attend — Atlanta, Chicago, Muncie and points between. A goodly representation was present from Canada, too.

★ ★ ★

The officers and directors of The Wire Association salute and thank the Program Committee and the companies who opened their plants to our members and guests and take this opportunity to express publicly their appreciation to all those whose efforts and cooperation contributed to this most satisfactory two-day session.

★ ★ ★

TUNGSTEN CARBIDE WIRE DRAWING DIES

DESIGNED FOR LONG LIFE AND MAXIMUM WIRE PRODUCTION

Furnished semi-finished to within .001" to .002" of finished size at rough-drilled die prices. Require only light sizing and polishing before using. Our dies embody special design features that make for superior performance.

Also, a full line of carbide tooling for the Cold Heading Industry

EASTERN CARBIDE CORPORATION

NEW ROCHELLE, N. Y.

MUSIC WIRE and SPECIAL WIRES

Music Wire for Industrial Purposes
211 sizes Bright Polished, .0015" to .3125"
45 sizes Bright Tinned, .003" to .125"
Aluminum—Annealed—Belt Lacing—Brass, Soft and Spring—Copper, Bare and Tinned
Coppered Steel Spring—Galvanized—Tinned
Monel—Nickel Silver—Pure Soft Nickel—Oil Tempered, Steel Spring, Black Finish
Phosphor Bronze, Spring Temper—Pure Iron Wire—Resistance Wire,
Hoskins Chromel "A"—Stainless, Soft and Spring Temper—Tag Wire, 1000
in an Envelope—Florist Wire—Spooled and Coiled, 1/4-1/2-1-5#
Wires Straightened and Cut to length—Small Gauges—Small orders our specialty
Wires and Strands for the fishermen. Trolling Wires, Copper-Monel-Stainless.
Leader Wires, "Wilstabrite" Stainless and "Silverbrite" Music.

THE MALIN & COMPANY

2514 Vestry Ave. Established in 1884 **Cleveland 13, Ohio**

WE BUY WE SELL

We Pay Highest Prices for Used Machinery
WE HAVE LARGE INVENTORY OF
WIRE AND CABLE MACHINERY
SEND INQUIRIES — PROMPT ACTION
All Machines Reconditioned in Our Own Shop

WIRE & TEXTILE MACHINERY INC.
P. O. BOX 436, PAWTUCKET, R. I.

***Buy the Best:* MONTGOMERY SILVER-COATED COPPER WIRE**

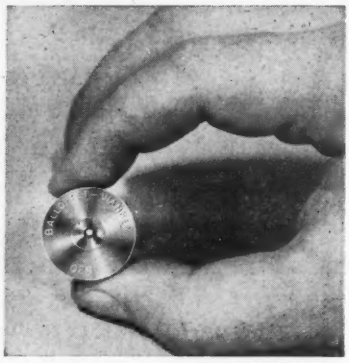
Round for Kel-F & Teflon Insulated Radio and Instrument Hook-up Wire and UHF Cables.
Flat for Tinsel Ribbons and Tinsel Garlands.
— also —
Bare Electric Tinsel Conductors for Telephone-Razor-Hearing Aid Cords.
— also —
Neva-Tarn—Metallic Yarns—Tarnish proof—for knitted and woven fabrics.

Est. 1871

THE MONTGOMERY COMPANY

25 Canal St., Windsor Locks, Conn. Tel.: 2-3338

BALLOFFET VIANNEY WIRE DIE CO., Inc.



All sizes from .081" down to .0004" in stock from New York.

Manufacturers of Quality diamond dies since 1870

BALLOFFET VIANNEY WIRE DIE CO., Inc.
6825 ADAMS ST., GUTTENBERG, N. J.
Tel: Union 3-3393

Handy & Harman Elects President

Judson C. Travis was elected President of **Handy & Harman,** refiners and fabricators of precious metals and their alloys, at the organizational meeting of the newly-elected Board of Directors held in April.

* * *

He takes over his new duties as chief executive officer on May 1 after thirty-five years of service with the company. During the past year he served as Vice-President and General Manager, and prior to that he had been Executive Vice-President since 1950.

* * *

Mr. Travis succeeds **G. H. Niemeyer,** who has been President for the past fifteen years and who had asked to be retired from the presidency this year. Active in the company affairs for 53 years, Mr. Niemeyer will continue as a member of the Board of Directors, Chairman of the Executive Committee, and President of Handy & Harman of Canada, Ltd., a wholly-owned subsidiary.

Packaging of Wire and Wire Products

(*Continued from page 575*)

The use of strippable plastic coatings as protection for some steel items was developed to a great degree by the Armed Services of the United States during the last war. This material is used for machined parts having

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WIRE DIE CORPORATION
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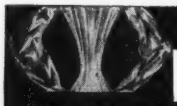

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highly finished surfaces on which even slight oxidation cannot be tolerated. We believe the use of such plastics on some high grade steel wires may become a possibility when and if the plastic materials are available at more reasonable cost than at present. However, on the great bulk of steel wire of all grades shipped in coil form, there is no need for such airtight packaging. While rust troubles are encountered occasionally on shipments of steel wire, the frequency and severity of the trouble is small indeed.

★ ★ ★

We refer again to the three packaging manuals published by the U. S. Department of Commerce and the U. S. Department of Defense, and recommend their use as standards for preparing shipments of steel wire and wire products. The methods described in these manuals are based on many years experience of the steel industry in making satisfactory deliveries of all steel products, all over the world.

Small Rolling Mills Designed with Heavy Machine Features

(*Continued from page* 586)

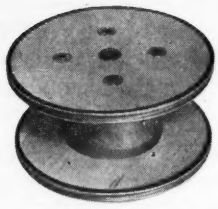
shockloads. Heavy bronze bearings are completely enclosed within a heavy-duty welded steel cabinet-type base. In addition, 4 in. units are available with roller bearings and can be arranged for water cooling.

★ ★ ★

The precision adjustment built into these mills makes them the machine of choice to produce material to fine tolerances. Parallelism is maintained by special hardened and ground screws, which can be adjusted individually, or by a single handwheel screwdown. A third type of adjustment using a worm gear screwdown is available for making fine adjustments while the machine is in operation. All units are equipped with large micrometer dials for easy reading.

★ ★ ★

Rolls are normally supplied of special alloy tool steel, hardened and ground to a high finish. Where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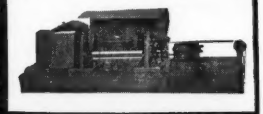
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requirements call for patterned surfaces, rolls are supplied in the unhardened state so that designs can be engraved in. Special rolls are available for hot rolling, or with mirror finishes.

★ ★ ★

Their compact design permits these machines to be used in any laboratory setup or production shop where space is at a premium. Groupings are possible so that work formerly done on three machines can now be accomplished by a single mill. Combined with their ruggedness, this feature has earned them wide acceptance among manufacturers of electronic tubes and wires, slide fasteners, tubular heating elements, optical parts, and jewelry. Laboratories and research departments are using them to test the properties of such diversified industrial materials as stainless steel, titanium, plastics, as well as new experimental alloys.

★ ★ ★

The possibility of marring fine finishes is minimized with these mills, since the upper rolls are driven from the lower rolls through hardened helical gears; thus, gear marks on finished pieces are eliminated. All of these features are incorporated in the complete lines of both the three and the four inch rolling mills.

Fabrication of Silver Wire

(*Continued from page* 581)

even less can be produced by this method.

★ ★ ★

As can be seen from the above description of the drawing methods for silver, there is actually very little difference from those used in working with any highly ductile base metal. As the intrinsic value of silver is fairly high, one should perhaps pay a little more attention to good housekeeping during all operations than is called for when working with commoner metals, but in general any wire-drawing operator of base metals need have no hesitation about taking on the production of wire of silver or its alloys.

★ ★ ★

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The Electric Tachometer Corp., 2218 Vine Street, Philadelphia 3, Pa., has issued a new 14 page catalog describing their Model 40 and accessories, a heavy duty tachometer, suitable for a wide variety of industrial applications, capable of producing accurate, instantaneous indications of speed and production of speed. Copies will be sent upon request.

A. G. Wentworth Elected President of Seymour Mfg. Company

At a meeting of the board of directors of **The Seymour Manufacturing Company** in April, **Alton G. Wentworth** was elected president of the company to succeed Arthur C. Wheeler who resigned on February 12, 1953.

★ ★ ★

Mr. Wentworth, a veteran of World War I, has been affiliated with The Seymour Manufacturing Company for approximately 37 years, having entered its employ in 1916.

★ ★ ★

In 1922 he was made production manager and in 1929 assistant sales manager. In February 1941 he was elected assistant secretary and in July of the same year was elected secretary. In August 1948 he was elected executive vice president, which position he held until his election as president.

To Sell C. I. Hayes Equipment

Announcement has been made that **Guy V. Bennett** has been associated with the **T. C. Jarrett Co.,** Denver, Colo., and will devote his efforts to the sales and engineering of the C. I. Hayes, Inc., line of heat treating furnaces and equipment.

★ ★ ★

Mr. Bennett is a metallurgical engineer, is thoroughly familiar with Hayes equipment and brings to the Denver area a wealth of engineering experience that will enable him to render competent counsel to users of industrial furnaces in their heat treating problems.

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Index to Advertisers

A

Acrometal Products, Inc. 576
Aetna Standard Eng'g Co. 618
Aetna Standard Eng'g Co.—Plastics Division 543
Ajax Industrial Supplies, Inc. 628
American Chemical Paint Company ..... 588 and 594
American Insulating Machinery Company 611
American Lanolin Corp. 619
American Steel & Wire Division U. S. Steel Corp. 552
American Woodworking Co. 629
Angier Corporation, The 625
Apco Mossberg Co. 617
Apex Alkali Products Co. 560

B

Baird Machine Co., The 544
Balloffet-Vianney Wire Die Co., Inc. 628
Belding, Heminway 606
Bethlehem Steel Co. 534
Bick, Hans C., Inc. 631
Boulin, Victor J., Inc. 628
Boyd & Sons Mfg. Corp. 620
Bridge Mfg. Co. 553

C

Canada Reels, Ltd. 630
Carboloy Dept. of General Electric Co. ..... 584 and 585
Carl-Mayer Corp., The 619
Ceilcote Co., The 630
Chase Brass & Copper 539
Chemsteel Construction Co., Inc. 629
Cleveland Tramrail Division of The Cleveland Crane & Engineering Co. 540
Cochaud Wire Die Corp. 628
Continental Carbide Die Co. 628
Continental Steel Corporation 626
Cook Mfg. Co. 556

D

Danforth Co., C. W., The 630
Davis Electric Co. 535
Durant Mfg. Co. 613
Durkee Mfg. Co. 626
Dykrex Corporation of America—Roos Tool & Mfg. Div. 617

E

Eastern Carbide Corp. 627
Eisler Engineering Co., Inc. 629
Electric Furnace Company, The ..... Back Cover
Electronic Rubber Co. 620
Elgin National Watch Co., Abrasives Div. 547
Emory, Robert J. Company 621
Entwistle, James L., Co. ..... 566 and 602
Erie Iron & Supply Corp. 626

F

Fatigue of Materials Laboratory 631
Fidelity Machine Co., Inc. 589
Firth Sterling, Inc. 533
Fisher Associates 623
Fort Wayne Wire Die, Inc. 628

G

Gerber, J. & Co., Inc. 616
Glader, Wm. Machine Works 596

H

Haskell-Dawes Machine Co., Inc. 615
Haveg Corporation 630
Heany Industrial Ceramics Corp. 613
Heil Process Equipment Corp. 609
Heineman Corp., Oscar 625
Howsam Spool Company 629
Hughesville Machine & Tool Company 612

I

Imhoff, Wallace G., Co. 631
Indiana Wire Die Company 628
Industrial Diamond Powders, Inc. 629
Industrial Ovens, Inc. 630

J

Johnson Steel & Wire Co., Inc. 592

K

Kelly Wire Die Corporation 628
Keystone Steel & Wire Company 591
Kilmer, M. D. & Co. 625

L

Lancaster, Allwine & Rommel 631
Lavendier, Charles Co., Inc. 623
Lewis Machine Company, The 598

M

Malin & Company, The 627
Manco Mfg. Co. 603
Manson Laboratories 624
Marshall-Richards Machine Co., Ltd. 538
Mason Can Company 624
McCaskie, Wm., Inc. 625
Metal Carbides Corporation 564
Metal and Thermit Corporation 614
Mettler Machine Tool, Inc. 550
Meyer, Roth & Pastor 607
Micro Products Company 587
Miller, R. H. Co., Inc. 541
Milton Machine Works, Inc. 624
Montgomery Co., The 627
Morgan Construction Company ..... Front Cover
Morgardshammars Mek Verkstads AB 561
Morrison Industries, Inc. 618
Mossberg Pressed Steel Corp. 597

N

National Lock Washer Co., The 555
National Machinery Exchange 630
National Research Co. 626
National Rubber Machinery Co. 599
New England Butt Company 629
New England Lacquer Co. 615
New England Wire Die Co. 628
Niehaus, K. A. Maschinenfabrik 610
Nilson, A. H. Machine Co., The 614
Nopco Chemical Co. 542
North Anson Reel Co. 629
Norton Co. 622
Nukem Products Corp. 630

P

Pacific Coast Borax Company 616
Parkin Chemical Co., The 629
Pittsburgh Carbide Die Co. 628
Pittsburgh Steel Company 563
Platt Brothers & Co., The 629
Porter, H. K., Inc. 624
Pourtier Freres, Ets. 608

R

Rayaloy Carbide Corp. 630
Republic Steel Corp., Pressed Steel Div. 557
Roebling, John A. Sons Co. ..... 564A and 596A
Roll-A-Reel 623
Roux Wire Die Works, Inc. 557
Royle, John & Sons 612
Rusch Wire Die Corporation 628

S

S. S. Specialty Braids 630
Scott Testers, Inc. 629
Scudder, E. J. Foundry & Machine Co., Inc. 629
Sjogren Tool and Machine Co., Inc. 593
Sleeper & Hartley, Inc. 629
Solar Compounds Corporation 595
Specialty Wire Co., Inc. 629
Spencer Wire Corp. 621
Standard Industrial Compounds Co., Inc. 545
Standard Mill Supply Co. 600
Steel Equipment Co. 601
Surface Combustion Corp. 630
Swift & Company 546
Syncro Machine Company 559

T

Techema Co., The 630
Terkelsen Machine Co. 629
Trauwood Engineering Co., The 630

U

U. S. Steel Corp.—American Steel & Wire Div. 552
Universal Wire Die Co. 628

V

Vascoloy-Ramet Corporation 564B
Vaughn Machinery Company 562

W

Wafios Maschinenfabrik 605
Wardwell Braiding Machine Co. 590
Warner Company 623
Warren Wire Company 554
Wartenweiler, Emilio 604
Waterbury Farrel Foundry & Machine Co. 536
Watson Machine Company ..... Inside Back Cover
Wayne Wire Die Co. 628
Wean Equipment Corporation 573
Westinghouse Electric Corp. Industrial Heating Div. ..... 548 and 549
Wickwire Brothers, Inc. 626
Wilson, Lee Engineering Co., Inc. ..... Inside Front Cover
Winchester Reel Co., Inc. 622
Wire & Textile Machinery, Inc. 627

Y

Youngstown Sheet & Tube Company, The 578
Youngstown Welding & Eng'g. Co., The 558

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Pacific Coast Borax Co., New York, N. Y.
Standard Industrial Compounds Co., Chicago.
Swift & Company, Chicago, Ill.

CONDUCTORS—Flexible, Electrical
Montgomery Co., The, Windsor Locks, Conn.

COPHOLDERS—Steel
Apco Mossberg Co., Attleboro, Mass.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

CORDS—Electrical, Tinsel Conductor
Montgomery Co., The, Windsor Locks, Conn.

CORROSION PREVENTIVE PAPERS—
Angier Corporation, The, Framingham, Mass.

CRANES—Wire Mill
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, O.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

CUTTING TOOLS—Carbide
Carboloy Dept. of General Electric Co., Detroit.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Metal Carbides Corporation, Youngstown, Ohio
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.

CUTTING TOOLS—Wire
Manco Manufacturing Co., Bradley, Ill.
Porter, H. K. Inc., Somerville, Mass.

DIAMONDS—Industrial
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Wayne Wire Die Co., Hillside, N. J.

DIAMOND POWDERS—
Danforth, The C. W. Co., Youngstown, Ohio
Elgin National Watch Co., Abrasive Div., Elgin, Ill.
Hyprez Div., Engis Equipment Co., Chicago, Ill.
Indiana Wire Die Co., Ft. Wayne, Ind.
Industrial Diamond Powders, New Kensington, Pa.
National Research Company, St. Clair Shores, Mich.
New England Wire Die Co., Worcester, Mass.
Roux Wire Die Works, Inc., Oriskany, N. Y.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Universal Wire Die Co., Cranford, N. J.
Wayne Wire Die Co., Hillside, N. J.

DIAMOND POWDER RECLAIMING—
Boulin, Victor J., Inc., New York, N. Y.
Danforth, The C. W. Co., Youngstown, Ohio
Industrial Diamond Powders, Inc., New Kensington, Pa.
National Research Co., St. Clair Shores, Mich.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.

DIAMOND TOOLS—
Carboloy Dept. of General Electric Co., Detroit.
Indiana Wire Die Co., Ft. Wayne, Ind.
Metal Carbides Corporation, Youngstown, Ohio
Roux Wire Die Works, Inc., Oriskany, N. Y.
Universal Wire Die Co., Cranford, N. J.
Wayne Wire Die Co., Hillside, N. J.

DIES—Carbide, Tungsten & Tantalum
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Boulin, Victor J., Inc., New York, N. Y.
Carboloy Dept. of General Electric Co., Detroit.
Continental Carbide Die Co., Lyndhurst, N. J.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Indiana Wire Die Co., Fort Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corp., Youngstown, O.
Rayaloy Carbide Corp., New York, N. Y.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Universal Wire Die Co., Cranford, N. J.
Vascoloy-Ramet Corp., North Chicago, Ill.
Wayne Wire Die Co., Hillside, N. J.

DIES—Cold Heading
Carboloy Dept. of General Electric Co., Detroit.
Continental Carbide Die Co., Lyndhurst, N. J.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Indiana Wire Die Co., Ft. Wayne, Ind.
Metal Carbides Corporation, Youngstown, Ohio
Rayaloy Carbide Corp., New York, N. Y.
Vascoloy-Ramet Corp., No. Chicago, Ill.

DIES—Diamond
Ajax Industrial Supplies, Inc., Fort Wayne, Ind.
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Boulin, Victor J., Inc., New York, N. Y.
Cochaud Wire Die Corp., New York, N. Y.
Ft. Wayne Wire Die, Inc., Fort Wayne, Ind.
Indiana Wire Die Co., Ft. Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
New England Wire Die Co., Worcester, Mass.
North American Philips Co., Inc., New York.
Roux Wire Die Works, Inc., Oriskany, N. Y.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Universal Wire Die Co., Cranford, N. J.
Wayne Wire Die Co., Hillside, N. J.

DIES—Extrusion
Carboloy Dept. of General Electric Co., Detroit.
Continental Carbide Die Co., Lyndhurst, N. J.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Metal Carbides Corporation, Youngstown, Ohio
Rayaloy Carbide Corp., New York, N. Y.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Universal Wire Die Co., Cranford, N. J.
Wayne Wire Die Co., Hillside, N. J.

DIES—Eyelet
Eastern Carbide Corp., New Rochelle, N. Y.
Kelly Wire Die Corp., New York, N. Y.

DIES—Nail, Nail Cutters, Feeder Blocks, Grippers, etc.
Pittsburgh Carbide Die Co., Monongahela, Pa.

DIES—Pointing
Sjogren Tool and Machine Co., Auburn, Mass.

DIES—Repairs & Re-Cutting
Ajax Industrial Supplies, Inc., Fort Wayne, Ind.
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Boulin, Victor J., Inc, New York, N. Y.
Carboloy Dept. of General Electric Co., Detroit.
Cochaud Wire Die Corp., New York, N. Y.
Continental Carbide Die Co., Lyndhurst, N. J.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Ft. Wayne Wire Die., Inc., Fort Wayne, Ind.
Indiana Wire Die Co., Ft. Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corporation, Youngstown, Ohio
New England Wire Die Co., Worcester, Mass.
North American Philips Co., Inc., New York.
Rayaloy Carbide Corp., New York, N. Y.
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Universal Wire Die Co., Cranford, N. J.
Vascoloy-Ramet Corp., North Chicago, Ill.
Wayne Wire Die Co., Hillside, N. J.

DIES—Special Shapes, Etc.
Continental Carbide Die Co., Lyndhurst, N. J.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Indiana Wire Die Co., Ft. Wayne, Ind.
Murex, Ltd., Rainham, England
Rayaloy Carbide Corp., New York, N. Y.

DIES—Swaging
Murex, Ltd., Rainham, England
Rayaloy Carbide Corp., New York
Sjogren Tool and Mach. Co., Inc., Auburn, Mass.

DIES—Tube Drawing
Balloffet-Vianney Wire Die Co., Inc., Guttenberg, N. J.
Carboloy Dept. of General Electric Co., Detroit.
Continental Carbide Die Co., Lyndhurst, N. J.
Eastern Carbide Corp., New Rochelle, N. Y.
Firth Sterling, Inc., Pittsburgh, Pa.
Indiana Wire Die Co., Fort Wayne, Ind.
Kelly Wire Die Corp., New York, N. Y.
Metal Carbides Corp., Youngstown, O.
Murex, Ltd., Rainham, England
Rusch Wire Die Corp., Croton-on-Hudson, N. Y.
Vascoloy-Ramet Corp., North Chicago, Ill.

DRAW BENCHES—
(See MACHINERY—Draw Benches)

DRUMS & TRAVERSES—Flange Steel
Entwistle, Jas. L. Co., Providence, R. I.
Republic Steel Corp., Pressed Steel Div., Niles, Ohio

DRYING EQUIPMENT
Carl-Mayer Corp., The, Cleveland, Ohio
Industrial Ovens, Inc., Cleveland, Ohio.
Rockwell, W. S. Co., Fairfield, Conn.

ENGINEERS—Consulting
Metal Fatigue—Fatigue of Materials Laboratory, Princeton, N. J.
Wire Insulating and Rubber and Plastics Processing—Hale and Kullgren, Inc., Akron, Ohio
Zinc—Imhoff, Wallace G., Co., No. Highlands, Calif.

EYELETS—Brass or Zinc
Platt Bros. & Co., The, Waterbury, Conn.

FENCING & FENCES—Wire
Interlocking Fence Co., Morton, Ill.

WHERE TO BUY, Continued

For more complete information, consult the annual Wire and Wire Products Buyers' Guide.

FOAM PRODUCING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.
Parkin Chemical Co., The, Pittsburgh, Pa.

FURNACES—Brazing
Electric Furnace Co., Salem, Ohio
Harper Electric Furnace Corp., Buffalo, N. Y.
Rockwell, W. S. Co., Fairfield, Conn.
Westinghouse Electric Corp., Industrial Heating Div., Meadville, Pa.

FURNACES—Galvanizing Equipment
Ajax Electric Co., Inc., Philadelphia, Pa.
Electric Furnace Co., Salem, Ohio
Holden, A. F. Co., The, Detroit, Mich.
Rockwell, W. S. Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio
Trauwood Engineering Co., The, Cleveland, Ohio
Wilson, Lee, Engr. Co., Cleveland, Ohio

FURNACES—Heat Treating
Ajax Electric Co., Inc., Philadelphia, Pa.
Carl Mayer Corp., The, Cleveland, Ohio
Electric Furnace Co., Salem, Ohio
Holden, A. F., Co., The, Detroit, Mich.
Morrison Industries, Cleveland, Ohio
Rockwell, W. S., Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio
Trauwood Engr. Co., Cleveland, Ohio
Westinghouse Electric Corp., Industrial Heating Div., Meadville, Pa.
Wilson, Lee, Engr. Co., Cleveland, Ohio

FURNACES—Lead Melting
Electric Furnace Co., Salem, Ohio
Rockwell, W. S. Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio
Westinghouse Electric Corp., Industrial Heating Div., Meadville, Pa.

FURNACES—Pot (oil, gas, electric)
Ajax Electric Co., Inc., Philadelphia, Pa.
Holden, A. F., Co., The, Detroit, Mich.
Westinghouse Electric Corp., Industrial Heating Div., Meadville, Pa.

FURNACES—Resistance Heating, Strand
(See Annealing Machines)

FURNACES—Salt Bath
Ajax Electric Co., Inc., Philadelphia, Pa.
Electric Furnace Co., Salem, Ohio
Holden, A. F., Co., The, Detroit, Mich.
Rockwell, W. S. Co., Fairfield, Conn.
Surface Combustion Corp., Toledo, Ohio
Westinghouse Electric Corp., Industrial Heating Div., Meadville, Pa.

GALVANIZING EQUIPMENT — (See MACHINERY—Galvanizing Wire)

GRINDERS—Roll
Norton Co., The, Worcester, Mass.

GUIDES—for Wire
Heany Industrial Ceramic Corp., New Haven Conn.

HAMMERS—Nail Heading
Pittsburgh Carbide Die Co., Monongahela, Pa.

HAMMERS—Swaging
Sjogren Tool and Machine Co., Auburn, Mass.

HOOKS—Pickling & Liming
Youngstown Welding & Eng'g' Co., Youngstown, Ohio

HOISTS—Electric Travelling
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, Ohio

IMPREGNATING MATERIALS—
Solar Compounds Corporation, Linden, N. J.

INHIBITORS—Pickling
American Chemical Paint Co., Ambler, Pa.
Apex Alkali Products Co., Philadelphia, Pa.
Parkin Chemical Co., The, Pittsburgh, Pa.

INSULATING MATERIALS—
Belding Heminway, New York, N. Y.
Electronic Rubber Co., Stamford, Conn.
Glass Fibers, Inc., Toledo, Ohio
Heineman Corp., Oscar, Chicago, Ill.
Merrimac Paper Co., New York, N. Y.
New England Lacquer Co., E. Providence, R. I.
Solar Compounds Corporation, Linden, N. J.
Solar Varnish Corp., Linden, N. J.

INSULATING MATERIALS — Paper—For Electric Wire Cable
Merrimac Paper Co., New York, N. Y.
Solar Compounds Corporation, Linden, N. J.
Solar Varnish Corp., Linden, N. J.

LACQUERING SYSTEMS — See MACH.—Lacquering Electric Wire

LACQUERS—For Electric Wire
New England Lacquer Co., E. Providence, R. I.
Solar Compounds Corporation, Linden, N. J.

LAME—LAHN—
Montgomery Co., The, Windsor Locks, Conn.

LIME—
Warner Co., Philadelphia and Bellefonte, Pa.

LUBRICANTS — For Metal Cutting, Stamping and Drawing
Apex Alkali Products Co., Philadelphia, Pa.
Miller, R. H., Co., Inc., Homer, N. Y.
Nopco Chemical Co., Harrison, N. J.
Standard Industrial Compounds Co., Chicago.

LUBRICANTS—Wire Drawing
(See Compounds—Wire Drawing)

LUBRICANTS—Wire Rope
Swift & Co., Chicago, Ill.

LUMBER—Wire Mill, Carload shipments for lagging and car blocking
Canada Reels, Ltd., Bury, Que., Canada
North Anson Reel Co., No. Anson, Me.

MACHINERY—Armoring (Cable, Wire, Hose)
American Insulating Mach'y Co., Phila., Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc., (used), Pawtucket, R. I.

MACHINERY—Barbed Wire
Glader Machine Works, Chicago, Ill.
Wafios, Maschinenfabrik, Reutlingen 3, Wurtt., Germany
Wean Engineering Co., Cleveland, Ohio

MACHINERY—Bolts & Rivets
Meyer, Roth & Pastor Maschinenfabrik, Koln-Raderberg, Germany

MACHINERY—Braiding
Fidelity Machine Co., Inc., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Wardwell Braiding Mach. Co., Central Falls, R.I.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Bunching
Cook Manufacturing Co., The, Paterson, N. J.
Haskell-Dawes Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Bundling, Scrap
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Cable, Electric
American Insulating Mach'y Co., Phila., Pa.
Fidelity Machine Co., Inc., Philadelphia, Pa.
Haskell-Dawes Machine Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Capstans (See Machinery—Winding Wire)

MACHINERY—Chain Making
Meyer, Roth & Pastor Maschinenfabrik, Koln-Raderberg, Germany
Nilson, A. H. Machine Co., Bridgeport, Conn.
Wafios, Maschinenfabrik, Reutlingen 3, Wurtt., Germany

MACHINERY—Closing Rope
Watson Machine Co., Paterson, N. J.

MACHINERY—Coiling Rod
Vaughn Mach'y Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Cold Heading
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Copper Wire Drawing
Aetna-Standard Engineering Co., Pittsburgh.
American Insulating Mach'y Co., Phila., Pa.
Hale and Kullgren, Inc., Akron, Ohio
National Mach'y Exch. (Used), New York.
Syncro Machine Co., Perth Amboy, N. J.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry. & Mach. Co., Waterbury, Conn.

MACHINERY—Covering Wire (See MACHINERY—Insulating Wire)

MACHINERY—Cutting
Eisler Engineering Co., Newark, N. J.
Lewis Machine Co., The, Cleveland, Ohio
Manco Manufacturing Co., Bradley, Ill.
Mettler Machine Tool, Inc., New Haven, Conn.
Porter, H. K., Inc., Somerville, Mass.
Wean Equipment Corp., Cleveland, Ohio

MACHINERY—Descaling Rod, Dry
Fisher Associates, New York, N. Y.

MACHINERY—Die Making
American Optical Co., Instrument Div., Buffalo, N. Y.
Boulin, Victor J., Inc., New York, N. Y.
Carboloy Dept. General Electric Co., Detroit, Mich.
Dykrex Corp., Roos Tool & Mfg. Div., Newark, N. J.
Firth Sterling, Inc., Pittsburgh, Pa.
Kelly Wire Die Corp., New York, N. Y.
Wayne Wire Die Co., Hillside, N. J.

MACHINERY—Draw Benches
Morgan Construction Co., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wartenweiler, Emilio, Milano, Italy

MACHINERY—Edging (See MACHINERY — Tandem Rolling and Edging Mills)

MACHINERY—Enameling
American Insulating Mach'y Co., Phila., Pa.
Cook Manufacturing Co., The, Paterson, N. J.
Industrial Ovens, Inc., Cleveland, Ohio

MACHINERY—Extruding
Aetna-Standard Engineering Co., Pittsburgh.
Davis-Standard Sales Corp., Mystic, Conn.
Hale and Kullgren, Inc., Akron, Ohio
National Rubber Machinery Co., Akron, Ohio
Royle, John, & Sons, Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Fence
Glader, Wm., Machine Works, Chicago, Ill.
Interlocking Fence Co., Morton, Ill.
Malmedie Maschinenfabrik, Dusseldorf, Germany
Wean Equipment Corp., Cleveland, Ohio

MACHINERY—Filament Coil Winding
Eisler Engineering Co., Newark, N. J.

MACHINERY—Flat Wire
Mettler Machine Tool, Inc., New Haven, Conn.
Torrington Mfg. Co., Torrington, Conn.
Wean Equipment Corp. Cleveland, Ohio

MACHINERY—Forming Wire
Baird Machine Co., Stratford, Conn.
Nilson, A. H., Machine Co., Bridgeport, Conn.
Wafios, Maschinenfabrik, Reutlingen 3, Wurtt., Germany

MACHINERY—Galvanizing Wire
Sleeper & Hartley, Inc., Worcester, Mass.
Steel Equipment Co., Cleveland, Ohio
Vaughn Machinery Co., Cuyahoga Falls, O.
Wean Equipment Corp., Cleveland, O.
Wilson, Lee, Engr. Co., Cleveland, Ohio

MACHINERY—Gang Winders
Entwistle, Jas. L. Co., Providence, R. I.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Grinding
Norton Co., The, Worcester, Mass.

MACHINERY—Insulating Wire
Aetna-Standard Engineering Co., Pittsburgh, Pa.
American Insulating Mach'y Co., Phila., Pa.
Davis-Standard Sales Corp., Mystic, Conn.
Ets. Pourtier Frères, Romainville, France
Fidelity Machine Co., Inc., Philadelphia, Pa.
Hale and Kullgren, Inc., Akron, Ohio
National Rubber Machinery Co., Akron, Ohio
New England Butt Co., Providence, R. I.
Royle, John & Sons, Paterson, N. J.
Syncro Machine Co., Perth Amboy, N. J.
Wardwell Braiding Mach. Co., Central Falls, R.I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Knitting
Fidelity Machine Co., Inc., Philadelphia, Pa.

MACHINERY—Lacquering Electric Wire
American Insulating Mach'y Co., Philadelphia.
Industrial Ovens, Inc., Cleveland, O.

MACHINERY—Lock Washer
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Looms, Wire Weaving
Interlocking Fence Co., Morton, Ill.
Wafios, Maschinenfabrik, Reutlingen 3, Wurtt., Germany

MACHINERY—Material Handling
(See Material Handling Equipment)

MACHINERY—Measuring Wire & Cable
Davis Electric Co., Wallingford, Conn.
Durant Mfg. Co., Milwaukee, Wis.
Entwistle, Jas. L. Co., Providence, R. I.
New England Butt Co., Providence, R. I.
Standard Mill Supply Co., Pawtucket, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Nail and Tack
Baird Machine Co., The, Stratford, Conn.
Glader, Wm., Machine Works, Chicago, Ill.
Meyer, Roth & Pastor Maschinenfabrik, Koln-Raderberg, Germany
National Mach'y Exch. (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Wafios, Maschinenfabrik, Reutlingen 3, Wurtt., Germany

MACHINERY—Optical, for Dies
American Optical Co., Instrument Div., Buffalo, N. Y.

WHERE TO BUY, Continued

For more complete information, consult the annual Wire and Wire Products Buyers' Guide.

MACHINERY—Pickling
Chemsteel Construction Co., Pittsburgh, Pa.
Youngstown Welding & Eng'g. Co., Youngstown, Ohio

MACHINERY—Pin Making
Baird Machine Co., The, Stratford, Conn.

MACHINERY—Pointing
Aetna-Standard Engineering Co., Pittsburgh, Pa.
Hale and Kullgren, Inc., Akron, Ohio
Meyer, Roth & Pastor Maschinenfabrik, Koln-Raderberg, Germany
Morgan Construction Co., Worcester, Mass.
National Mach'y Exch. (Used), New York, N. Y.
Scudder, E. J., Fdry. & Mach. Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.
Wean Equipment Corp., Cleveland, Ohio

MACHINERY—Poultry Wire Fencing
Interlocking Fence Co., Morton, Ill.
Malmedie Maschinenfabrik, Dusseldorf, Germany
Wean Equipment Corp., Cleveland, O.

MACHINERY—Pre-Heater for Wire (for Extrusion of Plastics)
Industrial Ovens, Inc., Cleveland, Ohio
National Rubber Machinery Co., Akron, Ohio

MACHINERY—Re-Spoolers
Boyd & Sons Manufacturing Corp., Philadelphia, Pa.
Davis Electric Co., Wallingford, Conn.
Eisler Engineering Co., Newark, N. J.
Emory, Robert J., Co., Newark, N. J.
Entwistle, Jas. L. Co., Providence, R. I.
National Mach'y Exch. (Used), New York, N. Y.
Steel Equipment Co., Cleveland, Ohio
Vaughn Machinery Co., Cuyahoga Falls, O.
Watson Machine Co., Paterson, N. J.
Wean Equipment Corp., Cleveland, Ohio
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.
Wire Insulating Machy., Div. of Machinery Electrification, Inc., Worcester, Mass.

MACHINERY—Rod Mill
Morgan Construction Co., Worcester, Mass.
Wean Equipment Corp., Cleveland, Ohio

MACHINERY—Rolling Mill
Morgan Construction Co., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.
Wean Engineering Co., Cleveland, Ohio

MACHINERY—Rubber Insulating
Davis-Standard Sales Corp., Mystic, Conn.
National Rubber Machinery Co., Akron, Ohio
Royle, John & Sons, Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Spark Testing
Davis Electric Co., Wallingford, Conn.
Entwistle, Jas. L. Co., Providence, R. I.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Spring Making
Carlson Company, The, New York, N. Y.
National Mach'y Exch. (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Wafios, Maschinenfabrik, Reutlingen 3, Wurtt., Germany
Wells, Frank L., Co., Kenosha, Wisc.

MACHINERY—Staple
Sleeper & Hartley, Inc., Worcester, Mass.
Wafios, Maschinenfabrik, Reutlingen 3, Wurtt., Germany.

MACHINERY—Straightening & Cutting
Kilmer, M. D., & Co., Cleveland, Ohio
Lewis Machine Co., The, Cleveland, Ohio
Medart Co., The, St. Louis, Mo.
Mettler Machine Tool Co., New Haven, Conn.
Meyer, Roth & Pastor Maschinenfabrik, Koln-Raderberg, Germany
National Mach'y Exch. (Used), New York, N. Y.
Wartenweiler, Emilio, Milano, Italy
Wells, Frank L., Co., Kenosha, Wisc.

MACHINERY—Stranding
Haskell-Dawes Machine Co., Philadelphia, Pa.
Hughesville Machine & Tool Co., Hughesville, Pa.
Milton Machine Works, Inc., Milton, Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Swaging
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.

MACHINERY—Take-Up and Pay-Out
Aetna-Standard Engineering Co., Pittsburgh, Pa.
American Insulating Mach'y Co., Phila., Pa.
Davis Electric Co., Wallingford, Conn.
Davis-Standard Sales Corp., Mystic, Conn.
Hale & Kullgren, Inc., Akron, Ohio
Industrial Ovens, Inc., Cleveland, Ohio
Marshall-Richards Machine Co., Inc., Trenton, N. J.
Standard Mill Supply Co., Pawtucket, R. I.
Watson Machine Co., Paterson, N. J.
Wire Insulating Machy., Div. of Machinery Electrification, Inc., Worcester, Mass.

MACHINERY—Taping
American Insulating Mach'y Co., Phila., Pa.
Ets. Pourtier Frères, Romainville, France
New England Butt Co., Providence, R. I.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

MACHINERY—Testing, Physical
Scott Testers, Inc., Providence, R. I.

MACHINERY—Tinning Wire
American Insulating Mach'y Co., Phila., Pa.
Cook Manufacturing Co., The, Paterson, N. J.
Steel Equipment Co., Cleveland, Ohio
Syncro Machine Co., Perth Amboy, N. J.
Wean Equipment Corp., Cleveland, Ohio

MACHINERY—Tinsel Rolling Mills
American Insulating Mach'y Co., Phila., Pa.

MACHINERY—Trolley Wire
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Tube Mill, Cold Drawing
Aetna-Standard Engineering Co., Pittsburgh, Pa.
Hale & Kullgren, Inc., Akron, Ohio
Marshall-Richards Machine Company, Inc., Trenton, N. J.
Mettler Machine Tool, Inc., New Haven, Conn.

MACHINERY—Twinning
(See Mach.—Bunching)

MACHINERY—Twisters, Wire
Cook Manufacturing Co., The, Paterson, N. J.
Davis Electric Co., Wallingford, Conn.
Haskell-Dawes Machine Co., Philadelphia, Pa.

MACHINERY—Used
National Machinery Exchange, New York, N. Y.
Wire & Textile Machy., Inc., Pawtucket, R. I.

MACHINERY—for Wire Welding (See WELDERS—Butt and Spot)

MACHINERY—Winding Wire
Eisler Engineering Co., Newark, N. J.
Entwistle, Jas. L., Co., Providence, R. I.
New England Butt Co., Providence, R. I.
Standard Mill Supply, Pawtucket, R. I.
Watson Machine Co., Paterson, N. J.
Wire Insulating Machy., Div. of Machinery Electrification, Inc., Worcester, Mass.

MACHINERY—Wire Bending
Eisler Engineering Co., Newark, N. J.
Kilmer, M. D., & Co., Cleveland, Ohio

MACHINERY—Wire Drawing
Aetna-Standard Engineering Co., Pittsburgh, Pa.
Cook Manufacturing Co., The, Paterson, N. J.
Hale & Kullgren, Inc., Akron, Ohio
Herborn, Herborn, Germany
Marshall-Richards Machine Co., Inc., Trenton, N. J.
Morgan Construction Co., Worcester, Mass.
National Mach'y Exch. (Used), New York, N. Y.
Scudder, E. J., Fdry. & Mach. Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Steel Equipment Co., Cleveland, Ohio
Syncro Machine Co., Perth Amboy, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Foundry & Machine Co., Waterbury, Conn.
Wean Equipment Corp., Cleveland, Ohio

MACHINERY—Wire Forming
Baird Machine Co., The, Stratford, Conn.
Kilmer, M. D., & Co., Cleveland, Ohio
National Mach'y Exch. (Used), New York, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Wire Rope
Milton Machine Works, Inc., Milton, Pa.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wrapping with Paper
Angier Corporation, The, Framingham, Mass.
Marshall-Richards Machine C., Inc., Trenton, N. J.
Terkelsen Machine Co., Boston, Mass.

MATERIAL HANDLING EQUIPMENT—
Cleveland Tramrail Div. of The Cleveland Crane & Engineering Co., Wickliffe, O.

MILLS—Tandem, Rolling & Edging
Wean Equipment Co., Cleveland, Ohio

NAIL TOOLING—Tungsten Carbide
Firth Sterling, Inc., Pittsburgh, Pa.
Pittsburgh Carbide Die Co., Monongahela, Pa.

NAILS—Wire
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Keystone Steel & Wire Co., Peoria, Ill.
Wickwire Brothers, Inc., Cortland, N. Y.

OVENS—Cable Lacquering
American Insulating Mach'y Co., Phila., Pa.
Carl-Mayer Corp., The, Cleveland, Ohio.
Industrial Ovens, Inc., Cleveland, Ohio
Morrison Industries, Cleveland, Ohio
Westinghouse Electric Corp., Industrial Heating Div., Meadville, Pa.

OVENS—Rod Bakers
Carl-Mayer Corp., The, Cleveland, Ohio
Morrison Industries, Cleveland, Ohio

OVENS—Welding Rod Coating
Carl-Mayer Corp., The, Cleveland, Ohio
Industrial Ovens, Inc., Cleveland, Ohio
Morrison Industries, Cleveland, Ohio

PAINT—Acid Proof
Ceilcote Company, Cleveland, Ohio
Nukem Products Corporation, Buffalo, N. Y.

PAINT BONDING CHEMICALS—
American Chemical Paint Co., Ambler, Pa.

PAINTS—Heat Resisting
American Chemical Paint Co., Ambler, Pa.
Solar Compounds Corp., Linden, N. J.

PAPER—Creped Wrapping
Angier Corporation, The Framingham, Mass.
Terkelsen Machine Co., Boston, Mass.

PAPER—For Coil Wrapping and Corrosion Prevention
Angier Corporation, The, Framingham, Mass.
Terkelsen Machine Co., Boston, Mass.

PATENT ATTORNEYS—
Lancaster, Allwine & Rommel, Washington, D. C.

PAY-OUT SYSTEMS—(See MACHINERY—Take-Up & Pay-Out)

PHOSPHATE COATING CHEMICALS — (See COMPOUNDS — Phosphate Coating)

PICKLING COMPOUNDS—
See (Inhibitors—Pickling)

PICKLING—Hooks, etc. Acid Resisting
Youngstown Welding & Eng'g' Co., Youngstown, Ohio

PICKLING TANK LININGS—
Chemsteel Construction Co., Pittsburgh, Pa.
Haveg Corp., Newark, Del.
Heil Process Equipment Corp., Cleveland, Ohio
Nukem Products Corporation, Buffalo, N. Y.

PIPES & FITTINGS—Acid Resistant
Haveg Corp., Newark, Del.

POTS—Lacquer
Industrial Ovens, Inc., Cleveland, Ohio

PRESSES—Hydraulic and Mechanical
Aetna-Standard Engineering Co., Pittsburgh, Pa.
Hale & Kullgren, Inc., Akron, Ohio

PULLERS AND GRIPS—For Wire
Morgan Construction Co., Worcester, Mass.
Scudder, E. J. Fdry & Mach. Co., Trenton, N. J.
Sjogren Tool and Machine Co., Auburn, Mass.
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Wean Equipment Corp., Cleveland, Ohio

REEL AND TENSION STANDS—
Davis Electric Co., Wallingford, Conn.
Entwistle, Jas. L. Co., Providence, R. I.
Fidelity Machine Company, Inc., Philadelphia.
Industrial Ovens, Inc., Cleveland, Ohio
Kilmer, M. D., & Co., Cleveland, Ohio
Roll-A-Reel, Cincinnati, Ohio
Sleeper & Hartley, Inc., Worcester, Mass.
Standard Mill Supply Co., Pawtucket, R. I.
Syncro Machine Co., Perth Amboy, N. J.
Watson Machine Co., Paterson, N. J.
Wire Insulating Machy., Div. of Machinery Electrification, Inc., Worcester, Mass.

REEL CRUTCHES—
Roll-A-Reel, Cincinnati, Ohio

WHERE TO BUY, Continued

For more complete information, consult the annual Wire and Wire Products Buyers' Guide.

Watson Machine Co., Paterson, N. J.

REELS & SPOOLS—Aluminum Alloy
Acrometal Products, Inc., Minneapolis, Minn.
Milton Machine Works, Inc., Milton, Pa.

REELS & SPOOLS—Annealing and Stranding
Acrometal Products, Inc., Minneapolis, Minn.
Apco Mossberg Co., Attleboro, Mass.
Howsam Spool Co., Aurora, Ill.
Milton Machine Works, Inc., Milton, Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Republic Steel Corp., Pressed Steel Div., Niles, Ohio

REELS—Metal Bound
Canada Reels, Ltd., Bury, Que., Canada
Durkee Mfg. Co., Pine River, Minn.
Howsam Spool Co., Aurora, Ill.
McCaskie, Inc., Wm., Westport, Mass.
North Anson Reel Co., No. Anson, Me.

REELS—Plywood
Carris Reels, Inc., Rutland, Vt.
Lavendier, Charles, Co., Inc., Pawtucket, R. I.
McCaskie, Inc., Wm., Westport, Mass.
Nelson Company, The, Baltimore, Md.
Winchester Reel Co., Ashuelot, N. H.

REELS & SPOOLS—Steel (All Types)
Acrometal Products, Inc., Minneapolis, Minn.
Apco Mossberg Co., Attleboro, Mass.
Clark, J. L. Mfg. Co., Rockford, Ill.
Howsam Spool Co., Aurora, Ill.
Mason Can Company, East Providence, R. I.
Milton Machine Works, Inc., Milton, Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Republic Steel Corp., Pressed Steel Div., Niles, Ohio

REELS—Wire Mill
Acrometal Products, Inc., Minneapolis, Minn.
Apco Mossberg Co., Attleboro, Mass.
Bridge Mfg. Co., The, Hazardville, Conn.
Canada Reels, Ltd., Bury, Que., Canada
Carris Reels, Inc., Rutland, Vt.
Durkee Mfg. Co., Pine River, Minn.
Howsam Spool Co., Aurora, Ill.
Lavendier, Charles, Co., Inc., Pawtucket, R. I.
Mason Can Company, East Providence, R. I.
McCaskie, Inc., Wm., Westport, Mass.
Mettler Machine Tool, Inc., New Haven, Conn.
Milton Machine Works, Inc., Milton, Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.
North Anson Reel Co., No. Anson, Me.
Republic Steel Corp., Pressed Steel Div., Niles, Ohio
Winchester Reel Co., Ashuelot, N. H.

REELS & SPOOLS—Wooden
Acrometal Products, Inc., Minneapolis, Minn.
American Woodworking Co., Chicago, Ill.
Bridge Mfg. Co., Inc., The, Hazardville, Conn.
Canada Reels, Ltd., Bury, Que., Canada
Carris Reels, Inc., Rutland, Vt.
Durkee Mfg. Co., Pine River, Minn.
Lavendier, Charles, Co., Inc., Pawtucket, R. I.
Nelson Company, The, Baltimore, Md.
North Anson Reel Co., No. Anson, Me.
Winchester Reel Co., Ashuelot, N. H.

REFRACTORIES—High Temperature
Norton Company, Worcester, Mass.

ROD BAKERS—(See Ovens—Rod Bakers)

RODS—Stainless Steel
American Steel & Wire Co., Cleveland, Ohio
Pittsburgh Steel Co., Pittsburgh, Pa.

RODS—Wire—Non-Ferrous
Platt Bros. & Co., The, Waterbury, Conn.

RODS—Wire, Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Indiana
Erie Iron & Supply Corp., Erie, Pa.
Gerber, J., & Co., Inc., New York, N. Y.
Keystone Steel & Wire Co., Peoria, Ill.
Pittsburgh Steel Company, Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

ROPE—Wire
American Steel & Wire Company, Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.
Roebling, John A. Sons Corp., Trenton, N. J.

RUST PROOF COMPOUNDS—
(See Compounds—Rust Preventing)

RUST REMOVING COMPOUNDS—
(See Compounds—Rust Preventing)

SALTS—Heat Treating, Descaling, etc.
Holden, A. F., Co., The, Detroit, Mich.

SATURATION SYSTEMS—
Industrial Ovens, Inc., Cleveland, Ohio
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.

SOAPS—Industrial and Wire Drawing
(See Compounds—Wire Drawing)

SODIUM—for Descaling
Holden, A. F., Co., The, Detroit, Mich.

SPOOLS—(See Reels & Spools)

SPOOLS—Stamped Metal for Retail Wire Sales
Clark, J. L. Mfg. Co., Rockford, Ill.
Mason Can Co., East Providence, R. I.

STAMPINGS—Steel
Acrometal Products, Inc., Minneapolis, Minn.
Mossberg Pressed Steel Corp., Attleboro, Mass.

STRIP—Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Roebling, John A. Sons Corp., Trenton, N. J.
Youngstown Sheet & Tube Co., Youngstown, O.

TANKS—Compound
Watson Machine Co., Paterson, N. J.

TANKS—Pickling and Plating
Ceilcote Company, Cleveland, Ohio
Chemsteel Construction Co., Pittsburgh, Pa.
Nukem Products Corporation, Buffalo, N. Y.

TESTERS — INSULATION (See MACHINERY—Spark Testers)

TESTING EQUIPMENT (See MACHINERY Testing, Physical)

TINNING PROCESS—
Metal & Thermit Corp., New York, N. Y.

TINSEL—Electric Conductor
Montgomery Co., The Windsor Locks, Conn.

TINSEL WIRE—Resistance, Lame, Decorative Cords Thread—Bare Copper, Silver and False Gold Coated, etc. (See TINSEL—Electric Conductor)

TOOLS—Nail Machine
Pittsburgh Carbide Die Co., Monongahela, Pa.

TOOLS—Wire Cutting
Porter, H. K., Inc., Somerville, Mass.

TRAMRAIL SYSTEMS—
Cleveland Tramrail Div. of the Cleveland Crane & Engineering Co., Wickliffe, O.

TRANSMISSIONS—Variable speed (See Machy—Power Transmission)

TRAVERSES & DRUMS—For Reels
(See Drums & Traverses)

TRAVERSE MECHANISMS—
Apco Mossberg Co., Attleboro, Mass.
New England Butt Co., Providence, R. I.
Pressed Steel Div., Republic Steel Corp., Niles, Ohio
Watson Machine Co., Paterson, N. J.
Wire & Textile Mach'y, Inc. (used) Pawtucket, R. I.
Wire Insulating Machy., Div. of Machinery Electrification, Inc., Worcester, Mass.

TUBE BENDERS AND FORMERS—
Kilmer, M. D., & Co., Cleveland, Ohio

VALVES & FITTINGS—Acid Resistant
Haveg Corp., Newark, Del.

VARNISHES—for Electric Wire
N. E. Lacquer Co., E. Providence, R. I.
Solar Varnish Corporation, Linden, N. J.

VULCANIZING PANS AND EQUIPMENT—
American Insulating Mach'y Co., Phila., Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.
Wire Insulating Machy., Div. of Machinery Electrification, Inc., Worcester, Mass.

WELDERS—Spot and Butt
Eisler Engineering Co., Newark, N. J.
Micro Products Co., Chicago, Ill.

WIRE—Aluminum
Elmet Division, North American Philips Company, Inc., Lewiston, Maine
Malin & Co., The, Cleveland, Ohio
Seneca Wire & Manufacturing Co., Fostoria, O.

WIRE—Barbed
Gerber, J., & Co., Inc., New York, N. Y.
Interlocking Fence Co., Morton, Ill.

WIRE—Brass
Chase Brass & Copper Co., Waterbury, Conn.
Spencer Wire Corp., Union, N. J.

WIRE—Brush
Gerber, J., & Co., Inc., New York, N. Y.
Spencer Wire Corp., Union, N. J.

WIRE—Cast
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Cold Heading
American Steel & Wire Co., Cleveland, Ohio
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Erie Iron & Supply Corp., Erie, Pa.
Gerber, J., & Co., Inc., New York, N. Y.
Keystone Steel & Wire Co., Peoria, Ill.
Pittsburgh Steel Co., Pittsburgh, Pa.
Roebling, John A. Sons Corp., Trenton, N. J.
Seneca Wire & Manufacturing Co., Fostoria, O.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Copper
Chase Brass & Copper Co., Waterbury, Conn.
Gerber, J., & Co., Inc., New York, N. Y.
Spencer Wire Corp., Union, N. J.

WIRE—Flat, Fine
Elmet Division, North American Philips Company, Inc., Lewiston, Maine
Gerber, J., & Co., Inc., New York, N. Y.
Montgomery Co., The, Windsor Locks, Conn.

WIRE—Forming
Erie Iron & Supply Corp., Erie, Pa.
Pittsburgh Cut Wire Co., Pittsburgh, Pa.

WIRE—Galvanized
Erie Iron & Supply Corp., Erie, Pa.
Gerber, J., & Co., New York, N. Y.

WIRE—Manufacturers
American Steel & Wire Co., Cleveland, Ohio
Bethlehem Steel Co., Bethlehem, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Continental Steel Corp., Kokomo, Ind.
Gerber, J., & Co., New York, N. Y.
Johnson Steel & Wire Co., Worcester, Mass.
Keystone Steel & Wire Co., Peoria, Ill.
National Lock Washer Company, The, Newark, N. J.
Pittsburgh Steel Co., Pittsburgh, Pa.
Roebling, John A. Sons Corp., Trenton, N. J.
Seneca Wire & Manufacturing Co., Fostoria, O.
Spencer Wire Corp., Union, N. J.
U. S. Steel Co., N. Y., N. Y.
Wickwire Brothers, Inc., Cortland, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Music
American Steel & Wire Co., Cleveland, Ohio
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Malin & Co., The, Cleveland, Ohio
Seneca Wire & Manufacturing Co., Fostoria, O.
Specialty Wire Co., Inc., Worcester, Mass.
Spencer Wire Corp., Union, N. J.

WIRE—Nickel Silver and Phosphor Bronze
Chase Brass & Copper Co., Waterbury, Conn.
Malin & Co., The, Cleveland, Ohio

WIRE—Oil Tempered
Pittsburgh Steel Co., Pittsburgh, Pa.

WIRE—Special Shapes
Continental Steel Corp., Kokomo, Ind.
National Lock Washer Company, The, Newark, N. J.

WIRE—Spring
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Erie Iron & Supply Corp., Erie, Pa.
Gerber, J., & Co., New York, N. Y.
Johnson Steel & Wire Co., Inc., Worcester.
Keystone Steel & Wire Co., Peoria, Ill.
Pittsburgh Steel Co., Pittsburgh, Pa.
Seneca Wire & Mfg. Co., Fostoria, Ohio
Specialty Wire Co., Inc., Worcester, Mass.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Stainless Steel
American Steel & Wire Co., Cleveland, Ohio
Firth Sterling, Inc., Pittsburgh, Pa.
National Lock Washer Company, The, Newark, N. J.
Pittsburgh Steel Co., Pittsburgh, Pa.
Specialty Wire Co., Inc., Worcester, Mass.

WIRE—Steel—Also Coppered and Galvanized Steel
Bethlehem Steel Co., Bethlehem, Pa.
Continental Steel Corp., Kokomo, Ind.
Erie Iron & Supply Corp., Erie, Pa.
Gerber, J., & Co., New York, N. Y.
Johnson Steel & Wire Co., Inc., Worcester, Mass.
Keystone Steel & Wire Co., Peoria, Ill.
Pittsburgh Steel Co., Pittsburgh, Pa.
Seneca Wire & Mfg. Co., Fostoria, Ohio
Spencer Wire Corp., Union, N. J.
U. S. Steel Export Co., New York, N. Y.
Wickwire Brothers, Inc., Cortland, N. Y.
Youngstown Sheet & Tube Co., Youngstown, O.

WIRE—Straightening and Cutting
Erie Iron & Supply Corp., Erie, Pa.
Pittsburgh Cut Wire Co., Pittsburgh, Pa.
Wickwire Brothers, Inc., Cortland, N. Y.

WIRE—Tungsten
North American Philips Co., Inc., Allied Products Division, New York, N. Y.

WIRE—Zinc
Platt Bros. & Co., The, Waterbury, Conn.

WRAPPING PAPER—Creped (See PAPER—Creped Wrapping)

YARNS & TAPES—
Belding Heminway, New York, N. Y.
Glass Fibers, Inc., Toledo, Ohio

YARN TESTERS—
Heineman Corp., Oscar, Chicago, Ill.
Scott Testers, Inc., Providence, R. I.

The WATSON MACHINE COMPANY

ESTABLISHED 1845

PATERSON 3, NEW JERSEY, U. S. A.

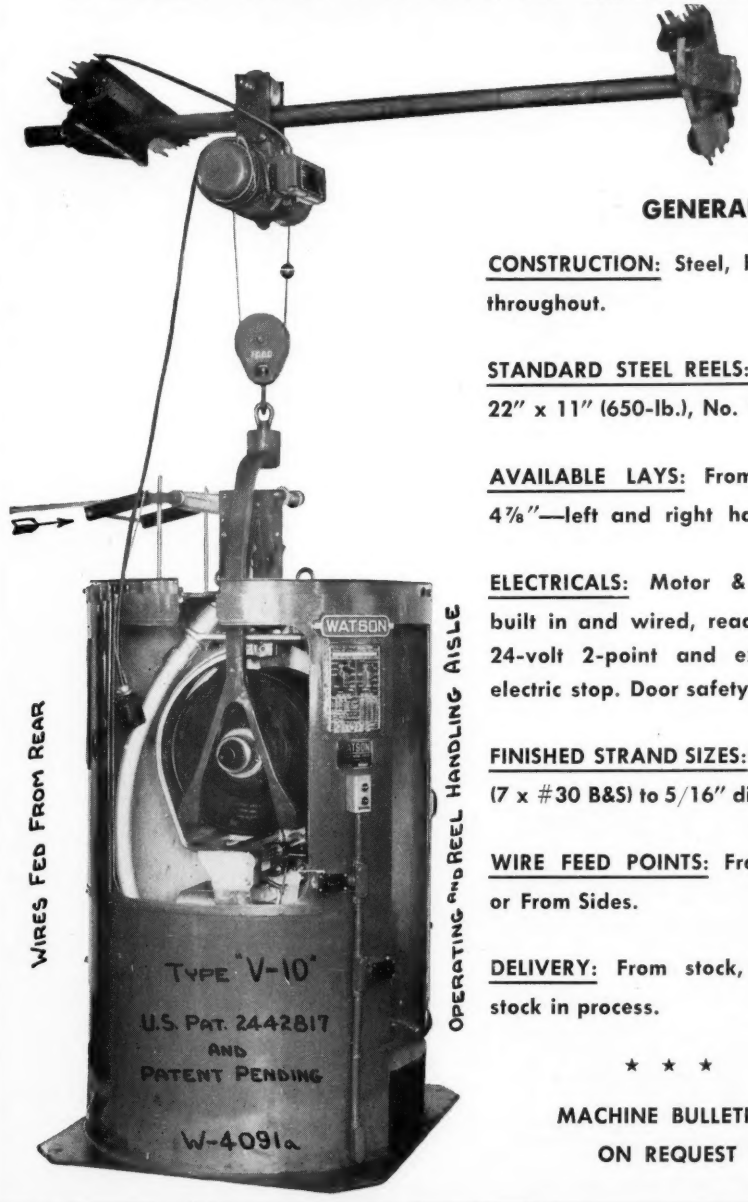
ELECTRICAL WIRE AND CABLE, WIRE ROPE, CORDAGE
AND MASTICATING MACHINERY MANUFACTURERS

WATSON

VERTICAL BUNCHERS TYPE "V"

IN WORLD-WIDE USE, THESE VERTICAL DESIGNS OFFER THE FOLLOWING OUTSTANDING ADVANTAGES:

1. HIGHEST POSSIBLE PRODUCTION AT LONG RUNS ON LARGE STANDARD WIRE TAKEUP REELS.
2. SMALLEST POSSIBLE FLOOR SPACE, AND IDEAL FOR ROW MOUNTING IN LIMITED SPACE.
3. LOW PURCHASE COST, ACHIEVED BY QUANTITY PRODUCTION.



GENERAL SPECIFICATIONS.

CONSTRUCTION: Steel, heat treated alloys and ball bearing throughout.

STANDARD STEEL REELS: No. 7—16" x 8" (250-lb.), No. 9—22" x 11" (650-lb.), No. 10—24" x 14" (1000-lb.).

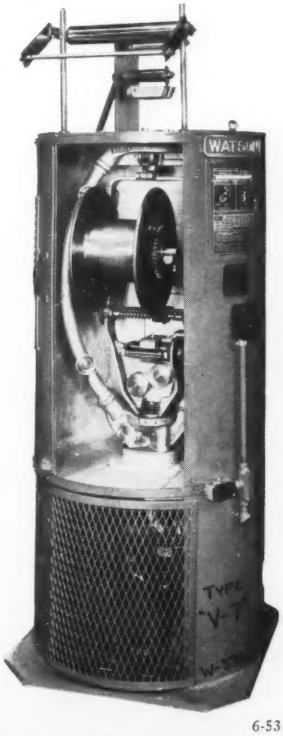
AVAILABLE LAYS: From 1/8" to 4 7/8"—left and right hand twist.

ELECTRICALS: Motor & Controls built in and wired, ready to run. 24-volt 2-point and extendable electric stop. Door safety switches.

FINISHED STRAND SIZES: From fine (7 x #30 B&S) to 5/16" dia. Strand.

WIRE FEED POINTS: Front, Rear, or From Sides.

DELIVERY: From stock, or from stock in process.



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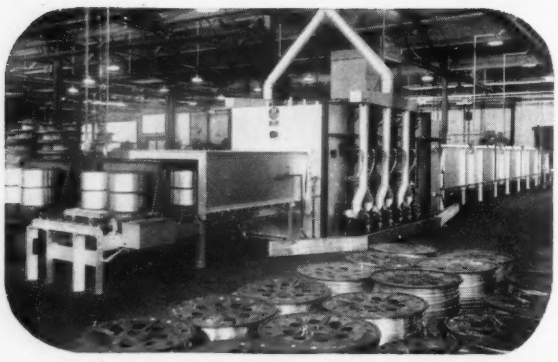
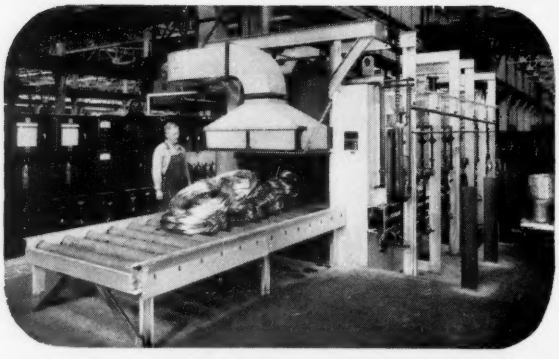
MACHINE BULLETINS ON REQUEST

6-53



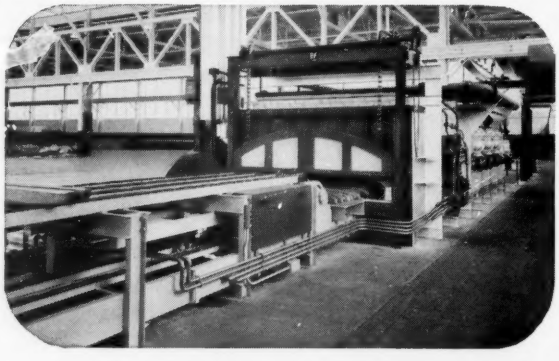
These combination electric and gas fired radiant tube bulkhead tray type furnaces are used extensively for bright annealing wire on reels and in coils.



An EF gas fired three-chamber roller hearth with forced circulating system providing accurate temperature distribution, uniform finish and anneal — continuously.

INVESTIGATE EF DEVELOPMENTS

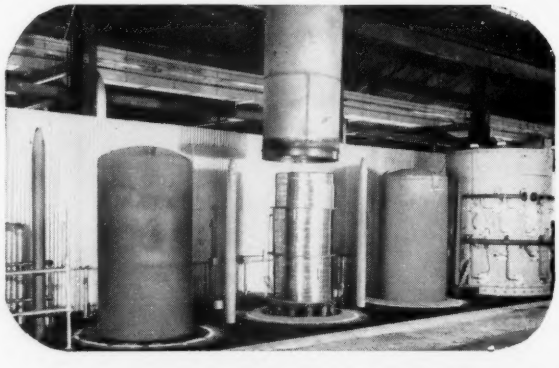
Clean annealing nickel-silver and other alloy wire in an EF gas fired radiant tube continuous roller hearth furnace. Handles coils up to 30" in diameter.



Wire bars up to 66" in length are uniformly and scale-free heated for rolling in this EF gas fired continuous pusher type furnace. Capacity 12,000 lbs. per hour.

FOR EVERY Annealing, Heating or Heat Treating PROCESS

• We have made outstanding production installations for normalizing rod and bright annealing wire in coil, strands, on reels and spools; both ferrous and non-ferrous, including stainless—for heat treating bolts, springs and other wire products—for heating billets, wire bars, bluing nails and other heating and heat treating processes. We solicit your furnace inquiries.



EF gas fired and electric hood, pit and other batch and continuous type furnaces are available for normalizing rod, annealing wire, strip and other processes.

EF

THE ELECTRIC FURNACE CO.

GAS FIRED, OIL FIRED AND ELECTRIC FURNACES
FOR ANY PROCESS, PRODUCT OR PRODUCTION

Salem - Ohio

Canadian Associates • CANEFCO, LIMITED • Toronto 1, Canada